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A JOURNAL DEVOTED
 TO BEES
 AND HONEY
 AND HOME
 INTERESTS.

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No. 8.

STAY STRAWS
 FROM DR. C. C. MILLER.

I ENJOYED reading p. 270 very much.

"HONEY-BEES from \$1 to \$3 a stand" is to be the regular assessment in Indiana.

STINGY is a word that doesn't apply to bees unless you make the *g* hard.

MELILOT HAY is a success with my stock. Been feeding a good bit lately.

WAGNER'S PEA, the new forage-plant, is said to yield honey from July to middle of October.

REAL-ESTATE DEALERS in California and Texas seem to be having quite a boom in the bee-journals.

THE CONSENSUS of opinion among the repliers in *A. B. J.* is against efforts to urge early brood-rearing.

ANOTHER OBJECTION, friend Boardman, to the 3 cornered starter in sections & the drone comb, which doesn't look so pretty.

POULTRY AND BEE men are to have a Scandinavian monthly published at Cedar Rapids, Iowa, called *Fjarkra-og Bi-Avl*. I'm not going to read it.

DOOLITTLE has been having a hot discussion in a local paper on tariff and temperance. His opponents come from afar and not singly, but Doolittle seems to draw the most blood.

THE REPLIERS in *A. B. J.* are badly mixed up over the question as to whether more honey will be left in the brood-chamber when run for comb than extracted, with a leaning toward the affirmative.

EIGHT-YEAR-OLD COMB honey is reported in *A. B. J.* as an article of diet on the table of Hon. Eugene Secor. He says no one at the table suspected it was old. Kept in the garret and never granulated.

J. B. TROTZMUELLER, in *Bienen-Vater*, says May sickness of bees—which is, perhaps, our spring dwindling—may be cured by speculative

feeding. [We don't catch on to that word "speculative." Doctor.—Ed.]

TELL RUTH MOORE I've seen that honeyed butter mentioned in several papers, but no instructions for it given. Can any of our foreign friends tell us how?

DOOLITTLE tells in *A. B. J.* that his bees got pollen March 10 from skunk-cabbage. Yet nearly every number of *A. B. J.* tells how to kill skunks. [There must be here a missing link. We fail to get the connection.—Ed.]

THAT MURMUR. I don't know. My bees *always* murmur in the cellar, and I've had them come through in fine shape. May be it's bad for them, but it always sounds kind o' comfortable. [There! you've redeemed yourself.—Ed.]

I TOOK TEN COLONIES out of cellar March 17. Weather kept beautiful for a week, but wife wouldn't let me take out more. Said I'd given strict orders not to allow it; 24th, winter came again. Big snowstorm, and about 10 above every morning up to date, 30th. Glad I had a wife.

SOME WRITE that they have no trouble with burr-combs with a $\frac{1}{4}$ -inch space between top-bars and supers, even with thin top-bars. But thin top-bars may sag as the years go by; and at any rate I want thick top-bars to keep the white sections at a distance from the black brood-combs.

THAT PICTURE on p. 275 is just what bees will always do when they get a chance. I've seen them start building upward more than a hundred times. Put an empty super over any colony this spring, and they'll build *up* when the flow begins. [Then you think such building is not a "strange freak."—Ed.]

YES, INDEED, Mr. Editor, you're right. on p. 269. It's a *big* grain of comfort to have so solid a man as H. R. Boardman with me on artificial heat. But I don't believe in making fires so often as he, once a week. I'd rather make a fire only once each winter, and then keep it up all winter. [Do you hear that, Boardman?—Ed.]

F. A. WILLSON, Bathgate, N. Dak., says (*A. B. J.*) that in 1892, with no bees, squashes grew as big as an apple, then turned yellow and died. In August, bumble-bees appeared, and all that set after that grew well. In 1893, bumble-bees were on hand early, and "every set produced a fine large squash." [Here is a good fact for that symposium.—Ed.]

G. W. DEMAREE reports in *A. B. J.* that he extracted all the unsealed honey from a lot of combs, then uncapped and extracted the rest, and evaporated artificially the first lot, which proved inferior in texture and flavor to that evaporated by the bees, and granulated sooner. [Here is a valuable fact. Who else has had similar experience in the same line?—Ed.]

EXPERIMENTER TAYLOR asks what I know about Given foundation to warrant me "in maligning its good looks." Simply that I used it as long as I could buy it, and I don't think I ever saw a sheet of uniform thickness. I never heard of a uniform sheet before making that statement, but have since, and I've no desire to dispute what others say.

JOHN F. GATES gives his method in *A. B. K.* Keeps his bees in big box hives 13 in. square and 18 to 24 in. high; never takes any honey from them, and but one swarm annually. He hives swarm on old stand in a hive 8 in. high; gives supers, gets good crop, then adds bees to the old hive, and melts up combs in little hive to have it empty for next year. If you think Gates is a fool, you're fooled.

T. W. COWAN said, in British convention, that it was not worth while, in his opinion, for English bee-keepers to follow the Americans, who were "rather apt to rake up old, tried, and discarded patterns of frames as though they were new, and their own ideas." But why shouldn't I pick up a gold coin because some one else has thrown it away thinking it brass? [That's it; you've hit it exactly.—Ed.]

T. K. MASSIE says he has no trouble with burr combs with top-bar $1\frac{1}{2}$ wide and $\frac{1}{2}$ thick spaced $1\frac{3}{4}$. His top-bar is $11\frac{1}{4}$ long. A longer top-bar might sag if $\frac{1}{2}$ inch thick. But he's down on the V edge on end-bar. [There seems to be some misunderstanding about this V edge. We make ours blunt, $\frac{1}{8}$ inch wide at the point. We have found in some cases that they have been objected to, simply because the V came to a point—that is, was sharp. By mistake on the part of the workmen, some of the V edges went out from the factory sharp, and to these is traceable some of the complaints.—Ed.]

WHAT SAY THE BEES? (see top of p. 286). But what if the two outside combs are full of honey to start with? My bees have said very emphatically they'd rather not have brood in outside combs. [Yes, that's true; but our bees (or, rather, queens) will often lay in all the combs of an eight-frame hive—yes, clear to the

sides of the hive; but they have almost never done this in the ten-frame hive. The fact is, the eight combs *seem* to have about the capacity of the average queen; therefore the bee-keeper who wants no surplus in the brood-chamber prefers the eight-frame hive.—Ed.]



NOTES FROM A MOHAWK VALLEY APIARY.

ITS BEE-KEEPERS NOT SECRET MONOPOLIZERS
OF A GOOD LOCALITY; THE GLUCOSE
PROBLEM.

By P. H. Elwood.

Quite likely the Rambler has not forgotten his experience four miles east of here at the Van Deusen foundation-factory; for in Ramble No. 104 he puts the bee-keepers of his native State into a class by themselves, and credits them with having a good thing which they secretly monopolize. Such is not the case. Bee-keepers have no Eldorado east of the Rocky Mountains—certainly not in the Mohawk Valley. Our crop of comb honey does not average more than 50 lbs. per colony, and our crop of extracted not more than 75 lbs., unless extracted too often for fine quality. For the last few years we have not averaged even that. The desire to monopolize this business does not exist, for a majority of bee-keepers are going out of the business, either by curtailing the extent of their business or by abandoning it entirely. Of course, the successive poor seasons have been largely instrumental in producing this result. More influential, however, have been adulteration and the *suspicion* of adulteration which have materially lessened the demand and lowered prices of both comb and extracted honey. The Wiley fabrication has reached every part of the country, while the sugar-honey slander is fast following it. It has been asserted that mere suspicion of adulteration has little effect on demand and prices; but so long as "loss of confidence" is credited with being the cause of our present disastrous business depression it would seem to be unwise to assert that "loss of confidence" in the genuineness of any staple production would be any less disastrous in the branch of business immediately concerned in producing and marketing the same.

Not long since, an intelligent lawyer of New York city informed me that he had seen comb honey in market that was wholly an artificial product, and made entirely without the aid of the bees. Again, a heavy jobber in honey informed me that the suspicion of sugar in honey deterred many from buying the white comb honey. A manufacturer who uses considerable extracted honey said he would no longer use any California honey, nor buy any Eastern hon-

ey, except from the producers, because of suspicions of its purity. When he finds a producer who adulterates, unless such a one is prosecuted to the full extent of the law by his brother bee-keepers, he may conclude that it is a common practice, and will use a substitute for honey, as do those who are suspicious of "sugar honey." The editor of GLEANINGS is entitled to the gratitude and support of bee-keepers everywhere for the publication of the analyses of James Heddon's honey. It is very much better that the occasional producer advocating or practicing adulteration be condemned and prosecuted by his associates than to wait for others to do so. This condemnation shows conclusively that the person exposed is but an exception to the rule that "producers do not adulterate."

The common and unmolested practice of so many dealers in adding glucose to honey, particularly that designed for table use, is practically ruining the market for extracted honey. What we need is a more enlightened public sentiment against the injury produced by adulteration; then more stringent laws can be enacted and enforced. I am confident the fact can be established that the use of glucose or artificial grape sugar is always injurious to health. With this truth recognized, we can rout the whole army of starch-sugar men. Chemists may decide that there is nothing injurious in glucose; but the verdict of the living laboratory contradicts this. Chemists do not understand why the variety of grape sugar in glucose is not as healthy as that found in honey; yet a swarm of bees fed on honey will live and flourish for an indefinite length of time, while one fed on commercial glucose will die. There is no ground for belief that the human stomach can assimilate glucose any better than can the honey-bee.* A series of experiments with animals and with men in penal institutions, by men who can not be influenced by money, to determine the effects of a diet in which glucose is substituted for common sugar, will give us what we want. The few experiments already made are not trustworthy.

THE CRANE SMOKER.

I have used a Crane smoker the past season: and until I find a better one I shall use no other. Before trial I was any thing but pleased with its appearance. The bellows was upside down, and the crooked nozzle was not looked upon with favor. I soon discovered that the position of the bellows was an improvement. It is more convenient to carry and use, the operator not having to reach quite so far for it, and then grasping it in the best position for use. The curved nozzle saves tipping it so far, and there is less danger of rolling out coals. But these are small advantages compared with its

great merit of being always ready with a volume of smoke sufficient for the crossiest colony. It is somewhat annoying to grasp a smoker when the bees are stinging you, only to find that it needs pumping a while before you can get a volume of smoke from it. The inclosed blast and smoke-proof bellows of the Crane, after continual use from spring to fall, showed their superiority in furnishing a blast that was free from wheeziness, and almost if not quite as clear as when new. The asbestos lining, together with a good draft, permits a combustion that usually leaves but little black wood. The smoke and the wood go out together. I have had smokers in which the draft or air-supply was so defective as to leave a large percentage of the wood charred, necessitating the removal of the same before filling up with fresh fuel. For this reason the Crane takes not very much more fuel than some other smokers of much less capacity. This smoker, to me, has proven to be both a time-saver and a sting-saver. Fire can be built in it in much less time than in other smokers I have used. A lighted piece of paper and a handful of charcoal from yesterday's fire, with a few strokes of the bellows, makes a perfect foundation for a hard-maple filling; and all day after, it is ready to respond to the slightest motion of the hand. In this connection I will say that a small sheet-iron dish or pail, with tight-fitting cover, is a convenient and safe receptacle for holding the coals at the close of the day's work, and for converting the same into charcoal. I do not think the smoker perfect. The leather cut-off valve in the one received last spring burned out in a couple of days. This was immediately replaced by one made of asbestos paper, which worked well during the remainder of the season. I used no other smoker, and this one probably saw as much service as the average smoker will receive in three or four seasons. Notwithstanding the lining of asbestos, the smoker would get too hot for comfort, especially the nozzle, which, while it could be knocked off for filling, on account of its thickness would remain too hot for replacing. I notice the smoker gotten out for this season's trade has the asbestos lining removed from the nozzle, and is hinged to the fire-pot. After a day's use I can say this is a great improvement. It also has a corrugated shield to protect the hand, and is not so heavy as the first one. Probably it is as light as a smoker of this size can be made and have it of good quality. The leather valve has been improved by a tin lining and a spring to help its action; but the best thing I have noticed about the 1894 smoker is the evidence it bears that no effort or expense will be spared to perfect it. The rim-cloth strainer for the nozzle can be removed for cleaning. After a day's trial I threw it away. Others may esteem this highly. Were I to hinge the nozzle I would point it, instead of at right angles with the bel-

*The ordinary commercial glucose is, we are sure, harmful. Chemists may be right regarding the article refined of its sulphuric acid.—Ed.

lows, at an angle of about 45° toward the left for a right-handed man. This is about as much of an improvement as the curved nozzle; for, while the latter saves bending the arm, the former saves twisting it. A good smoker is the most valuable implement in the apiary, and I have written this for the benefit of bee-keepers, and not for the benefit of the makers who probably do not need the smoker trade as much as do some of their competitors.

WILL HONEY GO ON THE FREE LIST?

The Senate committee have lowered the House duty on honey, and it would not be at all surprising if honey were put upon the free list before the Wilson bill passes. The Vermont State Association have sent in a protest, but I have not heard any thing from the standing "watch-dog" committee on legislation (Messrs. Hambaugh, Taylor, and Secor), appointed at Albany. The Mohawk Valley now produces but little more extracted honey than a supply for the home trade.

The weather so far this month has been as it usually is in April. Our cellars being heavily stocked, the warm weather caused the temperature to rise beyond the point of safety. We therefore set out a part of the bees. The waste on the cellar bottom for the ten days before setting them out nearly equaled that of the entire winter before. Those from the cellar emptied, appear in fair condition, with few dead swarms. We had removed over three hundred before we found the first dead one. This is earlier than we ever set out bees before.

Starkville, N. Y., March 20.

MIGRATORY BEE-KEEPING IN GERMANY.

GRAVENHORST'S HIVE; SOME OF ITS ADVANTAGES FOR MOVING.

By C. J. H. Gravenhorst.

As soon as I began keeping bees for a livelihood I came to the conclusion that I could achieve success only by adopting the migratory system of our old bee-masters of the heath who live on the large plains of North Germany, and of whom I gave an account in a previous article.

It may be that some of my brother bee-keepers in Germany have attained the desired success in apiculture without hauling their bees around from place to place; but it is only when they live in one of those regions of Germany where bees may gather honey from spring till autumn. But such regions are very scarce here. In most parts of our country we can expect a good honey harvest only, first, in spring—that is, in April, May, and June, from rape, bilberry, fruit-blossoms, etc.; or, second, in June and July from locusts, lindens, corn-flowers, etc.; or, third, in July, August, and September, from buckwheat and *Erica vulgaris* (heather). As I live in the second region I am obliged

to move around with my bees early in the spring, and in July, if I wish to make money with my bees; then early in the spring till June, and from July to September, my bees live at home mostly from hand to mouth. Thus I have to be continually on the lookout for the best bee-pasturage in my immediate neighborhood, as well as many miles from my apiaries; and when the frost killed the blossoms at home, or when I perceived that the blossoms near my apiaries did not yield any nectar, while at some distance the frost had not done any damage at all, or that the blossoms yielded more nectar on account of rain, or when some one at that place had sown several acres of good honey-plants—for instance, rape, white clover, etc., I did not hesitate about hauling by bees to those places which I found to be better. You see, friend Root, I was forced to travel around with my bees, and it often had to be done very quickly. You know what a great advantage it is to be in the right place at the right time, in order that the bees may work fast. You know, also, how soon a change of weather sets in, and how soon the plants lose their blossoms. Considering all this, you will readily see why I have to use a hive suitable for migration, that can be made ready without the least delay, for a long or short journey, and one that gives the greatest immunity from damage to any colony or its combs. The hive I have used for nearly thirty years has proven to be such a one. Let me relate a little episode that well illustrates what I have just said:

On the first day of April, 1893, I hauled over 40 colonies to a friend who resides in a village two miles from my home. Here abounds the bilberry (*Heidebeere*), yielding every year a good crop of honey. One morning my good friend called me and said:

"You know, friend Gravenhorst, we have had severe frosts for several nights, and so all the blossoms of our bilberry are destroyed. There is now no hope for pasturage for our bees."

"Yes, I know," said I, "and therefore it will be better to haul my bees home."

"You will not do that if I tell you what I know. I heard, some days ago, that, six miles from my village, there would be twenty or more acres of rape in full blossom. I was there yesterday, and I saw the large field. It was just as I was told. I also saw the bees hard at work on it. The rape has not suffered in the least from the frost. Now, I am of the opinion that we had better haul our bees this night to that place. Not far from the rape-field I have hired a bee-house in the garden of an old friend. There will be room enough there for our colonies."

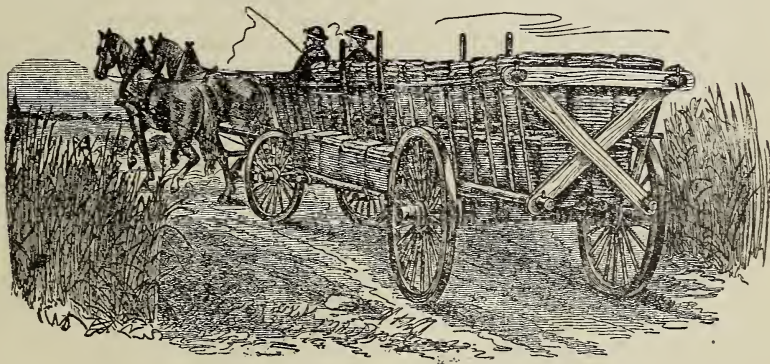
"All right," said I. "Then I will go with you and prepare my bees for the trip."

I went to my neighbor, a cartman, and ordered him (as I have no team) to be on hand with the bee-wagon at six o'clock in the evening, at

my friend's house in the neighboring village. At three in the afternoon I began to prepare my colonies for the journey. This I did in this way: I first turned over one hive after another. You remember the hive I use is the old straw skep, but larger, and furnished with 16 frames, nearly the size of your Langstroth frame. The next thing I did was to convince myself, by looking into the hive, whether the combs were fast in the frames or shaky. In this case a wooden stick, $\frac{3}{8}$ of an inch thick, was thrust into the space between the combs and into the wall of the hive, giving the combs a sufficient support: but as the combs are mostly built fast in the frames, very few sticks are necessary—in most of the hives, not any. When I see, by peeping into the hive, that all is right, I take a closely woven cloth, lay it over the opening of the hive, and tack the four ends to the hive with wire nails, or use a cord and tie the cloth to the hive, as you see in the engraving. Then I replace the closed hive on its stand. The bees which take wing on account of preparing the hive for the migration, or which flew off on account of the smoker, etc., will now enter the hive, as the fly-hole is not covered by the cloth.

After our arrival at the place of destination the hives were set in the bee-house on shelves, the moss in the entrances was pulled out, and the job was done. We bade farewell to our colonies, and went home. This was on the 6th of May; and as the weather was very fine for our bees on the following days, I hoped they would do very well. On the 9th of May I made up my mind to go and see what my colonies were doing. Before sunrise I was in the company of my bee-friend. The first thing now to be done was to take off the cloths from the hives, to see how it was with my bees. On turning over the first hive I was aware that the bees must have done their utmost, as the hive had a respectable weight. So it was. After removing the cloths I found that all was well. Not one comb was injured. There was nothing to do with the bees. Half an hour's work, and I knew all about every colony. Remember, friend Root, that all this was possible only because I always handle hives more than frames. I had scarcely ended my review when the bees began their flight. My friend and I stood aside, seeing our bees work.

"Well, my friend," said I, "it matters not



HOW THEY MOVE BEES IN GERMANY.

At five o'clock all was done. Then it took scarcely five minutes to prepare my hives for the migration. The cartman with his team and the bee-wagon had in due time arrived; and as soon as the bees had ceased to fly I would give a whiff of smoke into the entrance, causing the bees to go into the hive. I had ready some wet moss to close the entrances of the hives. After this was done the hives were placed on the wagon and stowed away, head down and cloth up, just as you see it done in the engraving. On such a wagon I load 60 or more of my movable-comb hives.

Now began the journey. It is an old practice of our wandering bee-keepers, after a five-minutes' passage to come to a standstill for five-minutes, in order to give the bees a chance to come to themselves again. They are then more quiet during the journey, for then they do not cause too much heat.

that Jack Frost has shown us his face by damaging our bilberry-blossoms. If we have only two more days like the last ones, we'll thank him for his trick."

Till the 16th of May we had very fine weather; but then the joy had an end; and as cold and windy weather set in, and the time of blooming of the rape was over, we hauled our bees home.

Would not every day that we arrived later in the rape-field have been a great loss? Does this not show how important it is to be at the right place at the right time? and what a great boon migratory bee-keeping can be? I extracted nearly 150 lbs. of fine rape honey; and not only this, 40 colonies had enough honey and pollen for brood-rearing; but I could also furnish other colonies with this new honey.

I should not have had such success if the frost had not destroyed the bilberry-blossoms,

that never yield as much honey as rape; and so I may say that the great facility of my wandering system helped me to a gain I should not have had otherwise.

However, this is not the only case in which I have had good luck. There has not been one year when I did not wander with my bees more than once. Every year, in the beginning of July, I took all of them 30 miles to the buckwheat-fields, and in the month of August to the large plains of the *Erica vulgaris*.

Well, friend Root, what a great boon it would have been for me if I had had at that time a bicycle, and had been such a perfect rider on the wheel as you are! How easily would I have discovered by a ride, the best honey sources in the surrounding country! Yes, the bicycle has a future for bee-keepers, at last, in Germany.

Wilsnack, Germany.

To be continued.

[We will explain to some of our older subscribers that the hive used by friend Gravenhorst is somewhat after the pattern of the old straw skep, except that it is oblong, larger, and has movable frames. Instead of using boards for tops and sides of the hive, he uses woven straw. From the engraving it will be seen that the hive is opened only at the bottom. To examine into the brood-chamber it is tipped over, and the frames drawn out while it is inverted. The frames are self-spacing, and friend Gravenhorst is a firm believer in the idea of handling hives instead of frames. Well, as the reader will notice, the hives are all ready for moving. All that is necessary is to tie the cloth over the bottom, invert it, and set them up in a wagon, as shown in the cut. Perhaps such an arrangement would not be quite satisfactory to the bee-keepers of the United States; but it is nevertheless a fact that Mr. Gravenhorst is not only a practical bee-keeper, but one who gets the honey; nor does he waste a good deal of labor in doing it, either.

Yes, yes, friend G., the bicycle would be a great help to you; and we hope to hear, before many months, of your riding from one apiary to another as you may establish them.

We may state that Mr. Gravenhorst writes his articles in good idiomatic English, and so, of course, he is perfectly familiar with what has been done by English-speaking bee-keepers, not only in England but in this country. "Bilberry" is our word for huckleberry.—ED.]

HYBRIDS OR MONGRELS—WHICH?

THE WRONG USE OF TERMS IN APICULTURE IN GENERAL.

By Rev. L. J. Templin.

The offspring of a cross between different species is a hybrid; and the result of a cross between different members of a species, or between different races of the same species, are mongrels. The offspring of hybrids is a hybrid, and the offspring of mongrels is a mongrel. Now, the question before us is: Are the German black or brown bee and the Italian bee distinct species, or are they only different races of the same species? Of course, if they are different species their crosses are hybrids; but if they are only races their crosses are only

mongrels. To determine this question, it is necessary to inquire as to what are specific, and what are only racial or varietal characters. To speak of those qualities that do not constitute specific characteristics I will first mention that neither size nor shape is to be regarded as specific characters. We have but to look around us to see abundance of evidence of the truth of this statement. The horse, the ox, the sheep, the pig, the dog, and the hen, furnish abundance of evidence of the truth of this proposition. Compare the Percheron horse, weighing more than a ton, with the Shetland pony, two and a half feet high, or the deer-like Jersey cow with the "big ox," weighing two tons, or the poodle dog, seven inches long, with the enormous mastiff or Newfoundland that can almost carry a man; or, again, look at a bantam hen beside a Cochins hen, for examples; yet no one thinks of placing these respective pairs in different species.

As to shape, I need but mention the difference between the heads of the greyhound and the bulldog, and that between the carrier and short-faced tumbler pigeon.

A difference of instincts does not necessarily indicate a difference of species. The setter, the pointer, the trail-hound, and the bulldog exhibit very distinct characteristics; yet they all belong to the same species; and among hens we find some breeds that are very much inclined to be broody, while other races are almost entirely non-sitters. So the temperament of bees, their readiness or reluctance to go into the supers, their manner of sealing their combs, whether white or dark, and other minor differences among the different kinds of bees, may be only racial distinctions.

Again, color is not a specific character. A glance at the vegetable world, especially cultivated plants, will prove that color has nothing to do in marking the differences of species. Take the rose tribe, which varies in color from pure white to almost pure black. Yet all belong to one species. The same is true of the chrysanthemum, the portulaca, and scores of other flowering plants and shrubs. In the animal world the same rule holds good. I need scarcely call attention to the different species of domestic animals among which color has no significance as to specific distinctions. Among our various kinds of domestic animals we find all colors, and all shades and combinations of color. Take the horse, the ox, the pig, the dog, and the hen, and, in each of these species, all kinds of color prevail. Even in the sheep, that has been bred for color through countless generations, we find white, gray, grizzled, mottled, brown, black, and red. If in both the vegetable and animal worlds, so far as we know, color is never a specific character, is it not pushing our assumptions beyond warrant to claim that color in bees is a mark of species and not of only race or variety?

We see, therefore, that it is in vain to look for specific characteristics in any external modification of any nature. How, then, may we distinguish between races and species? I answer, first: All the members of a species have the same anatomical structure. Gather together specimens of a species from the four quarters of the globe, and it will be found that the number, structure, articulations, and the relations of the bones are the same, with occasional and unimportant exceptions, such as an additional finger or toe, or other such slight variation. Secondly: A sure and unerring mark of distinction between the offspring of different species and of different races is found in the fact that the progeny of different races of the same species is fertile, and will propagate indefinitely, while hybrids are sterile, or have only a very restricted fertility, which generally disappears entirely in a few generations. When hybrids are fertile, after the first generation many of the offspring revert back to one of the parent types; sometimes to that of the father, and at others to that of the mother. If the hybrids continue to be prolific through several generations there comes in what is called disordered generation, in which the different individuals do not resemble either the parents or each other—are a group of very unlike individuals. Almost all known hybrids have been produced under the care of man, and it requires constant care to continue them in existence. But how different with mongrels! Without any care, and often in spite of watchful efforts to the contrary, mongrels will cross and mix in every shade and degree of relationship, and every individual will be as prolific as the original parents. The great trouble with races and mongrels is, to prevent their crossing and mixing to an undesirable extent. Now, with these general laws and principles before us, let us inquire whether the different kinds of bees that we know are species or races and varieties.

We have, or have had, in this country the German (or black) bee; the Italian, the Egyptian, the Cyprian, the Holy-Land, the Carniolans, and the Tunisian (or Punie) bees. I have studied all the literature accessible on the subject, and I have never seen a hint of there being any essential difference in the anatomical structure of any of these different kinds of bees. Nor have I seen any complaint or statement that the offspring of any of these crosses were any less prolific than their parents. Nor has there appeared any tendency to diminish prolificness as generation after generation has passed away. Now, here we have all the characteristics of races, but a total absence of the marks of species.

From the foregoing truths we must conclude either that our bees are not controlled by the general laws that govern in the natural world (for which we have no warrant), or we must admit that all the different kinds that we have

are distinct races belonging to one and the same species. It seems to me, Mr. Editor, that this last is the only scientific conclusion to which we can come. If this conclusion is correct, as I believe it to be, we have not different species of bees, only races and their crosses, or mongrels. It follows that, to speak of hybrids, is improper, as there are no such bees in the country.

Canon City, Colo.

[It has been generally recognized that the term hybrid, as applying to a cross between Germans and Italians, was incorrect; but the name got started wrong, and at this time it seems to be quite impossible to correct it. Unfortunately, there are other terms in apicultural nomenclature that are about as bad. Dr. Miller could probably furnish you quite a list. He would have these dropped, and correct ones used instead. But as publishers of tons and tons of bee literature, the task of making these changes, to say nothing of the expense and the practical impossibility of getting the general public to accept them, leads us to forbear even the attempt. Bro. York estimates that we have sent out, or will have when the next edition is exhausted, some 62 tons of the A B C of Bee Culture alone. This represents only a small part, comparatively, of other bee matter that we have sent out. Manifestly we can't change what has gone out; and if we do try to substitute new terms for what is to go out, the reading public will not. To illustrate: Our spelling is a reproach and a discredit upon all civilized nations using it. We got started wrong, and we now admit our inability to help ourselves.]

By the way, you have given us some interesting facts in regard to species, hybrids, and mongrels.—Ed.]

MANUM IN THE APIARY.

FLORAL FERTILIZATION DISCUSSED.

By A. E. Manum.

"Good morning, Mr. Hill. Drive right into the barn, and have your horses fed."

"Thank you, Manum; but I can't stop long. I must hurry home to look after my sap. This, you see, is what we call a "sugar snow;" and, by the way, here is a cake of sugar that my wife sent to your wife."

"Well, there she is under the shed, feeding her White Wonders. She owns the hens, and takes the principal care of them. I know she will be pleased with this nice cake of new maple sugar."

"Now, Manum, have called to ask you a few questions. I don't know any thing about bees, and don't want to know. I would not have a hive of them on my farm. Why! they would sting me to death, or drive me off. But what I want to know is this: Do bees damage buckwheat? I intend to plow up an old pasture, and sow it to buckwheat; but my neighbors tell me that Mr. Elliot's bees will ruin it, and I have come to ask your opinion; and I want you to tell me *all* you know about it. If you tell me to sow the buckwheat I will do so; and if you say bees will damage it, I shall sow rye."

"Ha! ha! ha! Well, Mr. Hill, I have arrived at the point now where such things amuse me. They used to worry me; but now my neighbors have learned the facts by actual demonstration. Years ago I used to furnish buckwheat, free, to all who would sow it. I did so until all were convinced that the bees did it no harm. No, no, Mr. Hill; bees do not harm any blossom; on the contrary, they do good by assisting the fertilization of all fruits and grain that attract them by the secretion of nectar—honey. Therefore I advise you to sow the buckwheat, with the assurance from me that the bees will do it no harm. I am surprised that your neighbor, Mr. Elliott, has not taken more pains to convince your neighborhood of the fact that bees are a benefit to farmers."

"Manum, you just mentioned fruit, as though bees were a benefit to it; but I am sure they do it great harm; for I did not have a single plum last year, and but few apples."

"Did you spray your fruit-trees?"

"No, I did not. The bees worked on them so much I knew there would be no fruit, and the spraying would be useless."

"Did any of your neighbors spray their trees?"

"Yes, my nearest neighbor south sprayed three or four times, but he got only half a crop, and he was one mile from the bees, and he thinks if he had been two miles away he would have got a full crop."

"Well, Mr. Hill, I will tell you something of my experience with my neighbors regarding this matter. Some 23 years ago, when I commenced bee-keeping here in the village—I was then in the harness business, you will remember—all my neighbors were worried for fear they would not be able to raise any fruit, cucumbers, melons, or squashes; but by the second year I heard no complaints. The bees were in my own garden, and I purposely exhibited cucumbers, melons, and fruit, to all the neighbors, so that all complaints were hushed. I soon located an apiary at New Haven Mills, in an old orchard that had been neglected, and, consequently, had borne but little fruit for a number of years. As a natural consequence, that neighborhood was all astir over my locating an apiary in their midst, because, as they declared, they could raise no more fruit or buckwheat. Of course, I felt hurt at the cool treatment I received on all sides. I finally bought several bushels of buckwheat at \$1.00 per bushel, and gave seed to all who would sow it. Some would not take seed, fearing they would lose their time; and even a few to whom I gave seed were persuaded not to sow it; but two years changed all this, and no one was angry because of the bees. Owing to the increase of my colonies I was forced to start another apiary. This third apiary I located in the town of Mankton, where the same prejudice existed as bad as in the other two locations; and I will simply mention one particular case which happened on Mr.

Wm. P. Chase's farm, located half a mile from my apiary. This man was very much displeased at my locating an apiary so near him. Well, that spring he sowed two small pieces of land to buckwheat. These pieces were several rods apart, and both alike as to fertility, so Mr. Chase told me afterward. While this buckwheat was in bloom, Mr. Chase and his help were doing some work beyond these two pieces; hence they passed near them every day. One piece the bees seemed to work upon very busily every day, while on the other scarcely any bees were seen on it during its bloom. Consequently Mr. Chase would often remark to his men, 'Well, boys, Manum's bees have not found this piece of buckwheat yet, and I shall get a good crop here; but they will ruin the other piece, for they are fairly swarming on it.' And now, Mr. Hill, I have a surprise for you. When it came time to harvest this grain, the piece where the bees visited the most, there was a fine crop; while on the other piece there was not grain enough to pay or the harvesting; and Mr. Chase told me himself that, had it not been for the looks, he would not have cut that piece. He did, however, but made no attempt to thrash it. To further satisfy you, Mr. Hill, suppose we walk over to Mr. Chase's (he is now my nearest neighbor), and ask him if bees injure buckwheat or even fruits."

"No, Manum, I am satisfied with your explanation, and I shall not hesitate to sow buckwheat where I intended to. Now, Manum, before I go I will do an errand for my wife. You remember you sent me three of your No. 1 potatoes, with the request that they be cooked, that I might test their eating quality. Well, we did as requested, and my wife was so well pleased with them that she wishes you to name them 'Bristol Beauty;' and I think it an appropriate name, as I consider them the nicest and best potato I ever saw."

"Very well. You may tell Mrs. Hill that she has named the potato, and hereafter they shall be known as the 'Bristol Beauty;' and to recompense her for the good name, I will send her some of my No. 3 seed ings, that you may get into the seed."

Bristol, Vt.

DECOY HIVES.

A LETTER TO THE BOYS; AND IF YOU ARE NOT A BOY, SKIP IT.

By Chalton Fowls.

Perhaps some of the boys who read GLEANINGS will get the bee-fever this spring, and will be possessed with a consuming desire for a swarm of bees.

Now, boys, I'll tell you how to get them without either begging or buying. Trap them. You probably have trapped other game—rabbit, quail, etc. Well, you can trap a swarm of bees just as well, and it's just as much fun. You

know if you catch some game yourself it's altogether different from what it would be if you bought it of some one. You say something like this: "See what I have caught—caught it myself." If caught alive without a wound, you value it still higher.

Well, now, to trap your bees you want an old hive if you can get one; or if you can get two or three to put in different places, so much the better. Now you want an old brood-comb to hang in each hive—the older and blacker the better. If you can't do any better, get two or three pieces of old combs and fasten them in the tops of the frames by means of melted wax. This is for bait. You want it old and black, so it will smell strong; but it should be free from the moths, and no honey in it. The bees will look for an empty hive to store honey in, but they don't want honey already stored in it. Now fill up the rest of the hive with empty frames; tie on the cover with stout twine, drawing it tight by twisting in a stick, and you have your trap ready. Now carry it to the woods; find some tree easy to climb, and draw up your hive by means of a cord. Finding a good resting-place for it among the branches, tie it securely; 10 or 15 feet is high enough if you can find a good place. Don't go very far into the woods. If the tree you select is near a field of white clover, so much the better.

Of course, you must have your traps ready just before swarming-time, so as to be ready for all the runaway swarms. If you visit your traps in the middle of the day you will see a few bees going in and out. These are the pioneers, or agents, sent on beforehand to stake out their claim. They'll work several days cleaning house before the swarm comes; but if the swarm doesn't succeed in running away you won't get them; but your chances are just as good for another. As soon as you know you have them, carry them home just at night. After letting down the hive with a cord, hang it to the middle of a spring-pole, and two boys can carry it home with hardly a jar.

Once in a great while the owner will follow a runaway swarm, and line them to a tree or your hive, as the case may be. In such a case he would have the first right; but he ought to be willing to pay you for securing them for him, and for your hive. But such a case seldom happens, as those who have large apiaries will not leave 50 or 100 swarms to run after one. But I once, some 10 or 12 years ago, caught a runaway swarm that was followed to the hive by the owners; but it was only half a mile, and they had but few bees at home. It happened this way:

Having obtained permission of my neighbor I fastened one of my decoy hives in a tree in his woods, about half a mile back from his house. He had a boy whom I will call John, because that wasn't his name. Toward night one day in June, John drove over to my place,

saying, as he came up in a hurry, "I want to get you to come right over to our house and hive my bees for me. They swarmed this forenoon, and I tried to hive them but they wouldn't go into the hive, but just clustered on the front of the hive."



"Why, John, I don't see why you shouldn't succeed in getting them in. You didn't shake them into the hive, did you?"

"No; I just shook them down in front of the entrance, as you told me to."

"That's right; in hiving them, never shake them in or they will run out. Shake them outside, and they will run in."



"But mine didn't. They just ran up on the front of the hive, and they have hung there all day."

"Oh! but you oughtn't to let them. You should just brush them off and not let them cluster at all."

"But I was afraid they would all take wing and go off. I did brush off a dozen or so, to try to start them to going in, but they would go right back to the cluster; and father would just stand there in his bantering way, and say, 'Better let 'em alone; *you* don't know how to hive bees.'"

"Well, John, as it's so near night I can leave my bees, and I'll go over with you and help you to get your bees into the hive."

A few minutes' ride in John's buggy brought us to his home. As we drove through the gate his mother came out exclaiming, "O John! they're gone! they're gone! We tried to stop them; threw water, and drummed on a tin pan, but it was no use. They just went right straight to the woods, and your father ran after them, and he saw them go right straight into Chalon's hive."

At this John's father came out of the house, looking very much heated but triumphant. Looking quizzingly at John he said, assuming great superiority, "*You* don't know how to hive bees. *I* hived your bees."

Oberlin, Ohio.

FAX.

By Ellery Krum.

Why can't every bee-keeper have a little 'speriment station of his own?

A good way to make non-swarmlers work to perfectshun is to put 'em on top of the hives and fill 'em with seckshuns, adding more as needed. Try it.

Every feller to his own noshun, but I prefer to do most of my spring feedin' in the airy part of September.

Hives settin' facing the west are inclined to tilt a little to the south when the ground first thaws out in the spring.

Sum hunny on the market is not only flavored, but 'pears to be tinted a delicate color also.

I am shure if the bees had their way about the matter they would build the bottom-bars purt nigh as wide as the brood-comb is thick.

A frame of hunny in the hive left over from winter will raise bout as menny bees as if fed fer stimulatn' purposes in the spring.

Have used the T super and seckshun-holder side by side; and I'd rather use the holder, because the bottoms of the seckshuns are never built up against with burr-comb; and fur another reezin, that queens are not so apt to git above. Hunny wuz purty heavy last seezin, and yet the bottoms of the holders did not swag down.

Oh the trees wuz made fer blossoms,

And the blossoms made fer trees;

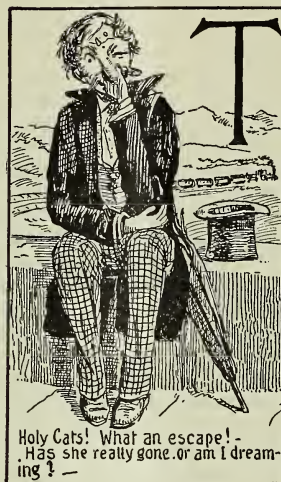
And the hunny in the blossoms—

It wuz made fer hunny bees.

[Another feature of the section-holder is, that wide wooden separators can be used, thus protecting from propolis the upright edges of the sections.—Ed.]

RAMBLE 106.

RAMBLER'S NARROW ESCAPE.



HERE was really no danger threatening Eugenia. The yelping growl heard on that eventful evening was merely the uneasy notes of the coyote. These animals never attack a person; but, observing Eugenia's hysterical

condition, and to avert unpleasant swoons, etc., the Rambler descended from his dignified position and escorted Eugenia to a place of safety, walking several feet in advance. Eugenia evidently had an unfavorable opinion of the wilds of California, with the loneliness, coyotes, skunks, tarantulas, scorpions, and centipedes. The advantages presenting themselves for the cultivation of that opinion I embraced with alacrity; and by the time we had arrived at the haunts of civilization Eugenia consented to take the next train. Eugenia's lunch-basket was a wonder to behold, and a wonderfully weighty thing to carry. "Thank fortune," said I, after lugging it into the car, "I do not have to provide for that depraved appetite." Eugenia was quite anxious for me to carry her pocket-book; but, not wishing to fall into any traps of that kind, I kindly but firmly refused, and reflected severely upon the bad sense of women in general and Eugenia in particular in not providing pockets for their valuables. No, I would not carry her pocketbook. Eugenia had a row of those big buttons on her cloak, and one had fallen off. She insisted that I should get down on all fours and search under the car-seats for it. I objected to the proceeding; and, while objecting, the train started with a glide, and I quietly bade Eugenia farewell and glided off the train.

I have reason to believe, however, that Eugenia has captured a cowboy. I obtained a very good photo of said boy, and will call him Eugenia's future.

So far as the Rambler is concerned, all future Eugenias and open letters of that nature will be treated with contemptuous silence. Good-by, Eugenia.

I return now to my ramblings; and this time

it is with Mr. Wheeler that I travel to Temecula and Fallbrook. We start from Riverside, and journey through the pass known as Box Springs. The water is developed, and large boxes are sunk into the ground, making a sort of reservoir from which the water is conducted to where it is needed. The number of these developed springs and boxes gives the locality its name. There are several apiaries in this canyon; and as the entire collection of Box Spring Mountains is not many miles from populous Riverside, the number of apiaries is on the increase.

Our journey led through several small towns, and I remembered Wildomar in particular as being the place where Mr. Hubbard, of Riverside, had purchased some chickens. They were of the Plymouth Rock denomination; and when they arrived at the Hubbard mansion they were examined with enthusiasm by Mrs. H.; but for many days when they were called to their breakfast they would run away in the opposite direction. Mr. and Mrs. H. thought this a strange freak; and, after some thought, Mr. H. found the reason to be that the chickens had been purchased of a Wildomar Dutchman, had been called in Dutch, and, when the good United States "chick, chick," had been shouted to them they did not "sabe." Due training, however, by Mrs. H. has quite naturalized and Americanized them.

The Dutch way of catching chickens is also quite novel, and may give our American poultry-fanciers a hint, which will save much boisterous running. A long light slender pole, with a wire hook on the end of it, is the simple apparatus. The hook is stealthily applied to the neck of the fowl, and it is immediately a captive.

We found Temecula another shipping-point for a great amount of honey. The town is not so thriving as it was in boom times, and is sort of waiting for the next boom.

We stopped over night here and found the hotel-keeper a typical Californian. He was an ex-bee-keeper; sold his honey for $3\frac{1}{2}$ cts. per lb., and on that low price went out of the business. Another factor among the reasons for quitting the business was that, on the lonely bee-ranch, his wife was attacked and dangerously bitten by a wildcat (Eugenias, take notice). The wife, however, was equal to the occasion, and got hold of it in such a way as to choke the life out of it. The town, therefore, had attractions for mine host and his family. The tinkle-tonkle of the supper-gong broke in upon our meditations; and upon gratifying curiosity I found it to be a large cultivator-tooth being whacked with a piece of iron. It made the valley echo, and, to all intents and purposes, it was as good as an expensive gong. We were rather late in getting to the supper-table, and I was placed opposite another rambler in the shape of a Temecula Indian, of which

there is quite a sprinkling around the country. My opposite was very taciturn, and devoted himself strictly to the business of satisfying the inner man.

When we proceeded upon our journey the next morning we found, in the next town, what might be termed a natural curiosity; but it was not considered remarkable here. This nook in the mountains has the unusual phenomenon of a Rainbow every day in the year. Wet or dry, hot or cold, clear or foggy, that Rainbow is sure to be found. It is not of the prismatic order, but prefixes to the name, J. P. M.; and this Rainbow owns 200 colonies of bees, a large amount of land, is supervisor in San Diego Co.,



and the postoffice in this neighborhood bears the same name; and, on the whole, though the heavens are not spanned, this Rainbow is no mean affair, and walks and talks to some purpose among the children of men.

As we get through the pass from Temecula to Fallbrook we get into a more prosperous-looking country. We skirt alongside the Red Mountain Ranch, containing 800 acres, fully 600 of which is planted to fruit-trees, and of varieties too numerous to mention. From one portion of the road, as we wind around the mountains we get a view of the Pacific Ocean, only about twenty miles away. Frequent fogs, and the moisture resulting therefrom, enables the ranchers to grow quite a variety of products here without irrigation; and though Fallbrook has no present boom on, we met parties who gave such a roseate description of the town and its possibilities that one would think there was not another such town on earth. We begin to think, also, that, to be a true Californian, the town in which we live must be the subject of unstinted praise wherever we go, whether it deserves it or not. In Fallbrook we found Mr. A. F. Cate, quite an extensive bee-keeper, and in business as a lumber-dealer. In the latter capacity he handles bee-hives and sections, distributing many thousands among the surrounding bee-keepers. Mr. Cate had just received

samples of the new sections from the Home of the Honey-bees, and was quite enthusiastic over their fine appearance. Mr. Cate is a producer of comb honey. In speaking of the relative merits of producing either comb or extracted honey, he thinks that, as it requires more skill to produce comb honey, the true bee-keeper will not be content to continue to produce extracted, but should aspire to the higher degree of comb-honey production. The comb-honey idea presented in this manner has caused a spell of reflection to come over the Rambler.

Mr. Wheeler and I finished our southward journey at Fallbrook, and, soon after, returned to Riverside, making a very pleasant preliminary trip to what is to follow in the next experience of the RAMBLER.

SHEETING WAX FOR THE GIVEN PRESS.

PLAIN SPECIFIC DIRECTIONS.

By R. L. Taylor.

It should be understood that the dipping of wax to be made into foundation by the press is a very different operation from that of dipping it for the roller mill, and this for the reason that, since the roller mill thins and equalizes the sheet in the process of converting it into foundation, no especial care need be used to make it of any given thickness or even of equal thickness. But with the press the case is quite different; for when that is used the foundation produced corresponds with the sheet from which it is made, both in thickness and evenness, as well as in length and breadth.

One reason given to account for the fact that foundation made on the Given press has not become popular is that it does not look as well as does that made on the roller mill. It is true, the latter has a smooth shiny surface on account of the great pressure exerted upon it by the rollers, and a certain trim appearance from the fact that the edges of each sheet must be cut to bring it to the required dimensions—a process not necessary with Given foundation, though, of course, it may be used; but whether these peculiarities entitle the roller foundation to be called superior in appearance is a matter of taste. Many would call highly calendered printing-paper the finest in appearance; but the best taste by no means accords it that distinction; and, by the connoisseur, a book with untrimmed leaves is esteemed a luxury. The adage, "Handsome is that handsome does," ought certainly to hold in the case of foundation.

But another point made against the appearance of the Given foundation is, that the sheet is of uneven thickness, and this, since it may be presumed in some degree to affect its utility, has some validity unless the objection is substantially overcome; and to show how this may be accomplished to a satisfactory degree is one

of the points which prompted the writing of this article. My aim will be to describe a cheap process that will do well enough for one who desires to manufacture foundation sufficient only for himself and neighbors; but from it one who looks for a more extensive business can easily plan an outfit to suit the circumstances of his case.

An old wash-boiler answers very well as a dipping-tank for sheets for section foundation; but another vessel is required for melting wax to keep up the supply in the boiler, and for this a second boiler or even a less expensive vessel will do. For dipping for brood foundation there will be needed, in addition, a dipping-tank about 4x12 inches by 2 feet deep, which should be fitted with four feet to raise it an inch or so from the bottom of an outside tank which is for the purpose of keeping the first tank surrounded with hot water to prevent too rapid cooling, and should be 8x16 inches by 25 inches deep. The dipping-boards are best made of fine straight-grained pine $\frac{1}{2}$ of an inch thick, and of a width and length to correspond with the dimensions desired in the foundation. The swelling of the boards in soaking will just about make provision for the shrinking of the sheets. The boards should be as smooth as they can be conveniently made, and the sharpness of all their angles should be carefully preserved. The boards for dipping for section foundation may be any convenient length, but must not be wider than a single piece of foundation for filling a section is required to be—that is, it is very important that, for ordinary sections, it be $3\frac{3}{4}$ in. wide and not $7\frac{1}{2}$ in. Sheets of double width can not well be made of the proper evenness and thinness, and it follows that the board must, in dipping, be used edge first, not end first. For convenience in dipping I fit into the center of one edge of these boards a slim screw about $1\frac{1}{4}$ or 2 inches long, putting it in far enough to give it a firm hold, having first slipped on to it a bit of thick leather, which is for the comfort of the fingers in grasping the head of the screw. The screw is to serve as a handle in making the first immersion. The screw is put into the end of the boards used for brood foundation, for they may be dipped end first, though, if one chooses, they may be as well used the other way, in which case the wash-boiler would answer very well for a dipping-tank.

Presuming that the wax to be used for dipping has been properly cleaned, and it is desired to dip for section foundation, the next thing to be attended is the soaking of the dipping-boards, which should be continued for two or three days before the dipping is to begin, though a less time will do if warm water is used for the purpose, and from six to fifteen boards should be provided, according as the dipper has one, two, or three assistants. For soaking the boards, and for use in the process of dipping,

any good-sized tub or the half of a kerosene-barrel, if well cleansed, will answer. The water should be soft, and it is quite important that common salt be added at the rate of a quart to ten or twelve gallons, and the water should be well heated the evening before the dipping is to be done, and made somewhat warm again in the morning if it entirely cools.

The next thing to be done is the preparation of the wax for dipping, and this is the most critical part of the whole process. The most natural way to do this is to keep up a hot fire and bring the contents of the boiler to a hard boil in order to hasten the melting of the wax; but this is very objectionable, for it not only makes the room unnecessarily warm, but it brings the wax and water to such a high temperature that it takes longer to cool them sufficiently for dipping than to prepare the wax with a fire kept more under control. Following the course I shall now describe will prevent much discomfort, loss of time, and vexation arising from a failure to understand a variety of difficulties which the other course produces.

As early in the morning as may be, put into the boiler at least three or four inches of rain water and as much more as may be necessary to fill it to within three or four inches of the top after all the wax, intended to be melted at first, is put in, and make a good fire of light wood; then, as soon as the water begins to warm, commence to put in the wax, and continue to do so as fast as a convenient place is found for it, keeping up a moderate fire of the same kind of wood. If the wax is in thin cakes, or well broken up, it will be an advantage, as it will thus melt quicker with less heat.

As soon as a good proportion of the wax is melted, a thermometer that will register the boiling-point of water is well nigh indispensable. Now hang the thermometer into the contents of the boiler, and observe the temperature indicated. But be prepared to know certainly whether the bulb of the thermometer is in the wax or the water. You may be inclined to think that, if you let the thermometer reach 170°, it will soon cool sufficiently. You set the boiler off the stove at that point, but you are surprised to find that, instead of cooling, your wax continues to get hotter and hotter. The reason is, the bulb hangs in the wax, and fails to reveal the fact that the water has become much hotter than the wax; and after it is removed from the stove it continues to impart its heat to the wax. It is well, therefore, to pay attention to the heat of the water as well as to that of the wax.

The aim is, to get the wax to 155° F., the right temperature for dipping, and at the same time have it all melted. It is impossible, owing to the varying proportions of water and wax, and to the difference in the amount and size of the pieces of unmelted wax, to give an exact rule for removing the boiler; but in a general

way, where the wax is at about 155°, there being but little unmelted wax left, it will be found nearly right, and at this point it is to be set off on a box of convenient height. If there is other wax to be added, that should, in the mean time, be heating, and also a kettle of water; for it is by the addition of hot wax and boiling water that the temperature of the boiler is to be maintained. A close-fitting board as a cover for the boiler will also assist if put on whenever dipping is intermitted for even a short time.

The thermometer is to be retained in the wax, and its standing observed from time to time. Some lots of wax will dip at a little higher temperature than others; and the higher the temperature at which it is dipped, the thinner can the sheets be made. When it is at from 155° to 160°, and all or nearly all melted, try it with a dipping-board. If the sheet cracks irregularly, either the board is too cold, the wax too warm, or there is a cold draft in the room. Shut out the draft. A little use will warm the board, and the wax, if too warm, will soon cool sufficiently. If there is a straight horizontal crack in the sheet there has been a sudden jar or sharp stoppage of the board in its descent into the wax.

When every thing is ready, remove the boards from the tub to let the water drip off a little; then take each one in turn by the leather head of the screw and let it steadily and rather quickly down into the wax to the upper edge, but not so that the upper edge is covered with wax, and withdraw it at once. Letting it drip a moment, pass it to the other hand, reversing it at the same time, and sink the other edge into the wax an inch, more or less, according to the weight you desire to give the sheets. When the board has dripped a moment, drop it into the water already in the tub. Almost at once the sheets may be removed from the board, when it is ready to be used again. A little cold water should be added from time to time to that already in the tub, to keep down the temperature.

When every thing is right, the sheets present a smooth even appearance, and break evenly all around from the ribbon of wax on the edge of the board; and with a small boy or girl to pass the boards promptly, the dipper can keep both his hands busy, so that the dipping is done quite rapidly. The hand which dips the boards the second time must be protected by an old glove, to prevent the inconvenience of a blistered thumb and finger.

As soon as it is perceived by the thermometer that the wax is sensibly cooling, some hot wax must be added, or, when that is not to be had, boiling water. A tea-kettle of water may be added at one time, but not so much of the hot wax.

Even when a film of wax begins to form on the surface, dipping may still be carried on if it is kept pushed aside; but more satisfactory

work will be done if the wax is maintained at a temperature a little too high for the formation of the film. If either the wax itself or the water below gets too cold, the sheets have a blotched uneven appearance.

Little need be said in addition with reference to the dipping of the sheets for brood foundation. The process is analogous, and a much less difficult one than the other. A little attention will have to be given to learn how deep to dip the board the second time to get sheets of the required weight; but in most cases, somewhere from one-third to two-thirds its length will be found about right.

I have in the foregoing dwelt upon the more important and the more difficult points of wax-dipping for the press, necessarily omitting minor matters which can be easily learned or readily inferred, on account of the magnitude of the subject; and I feel sure that what I have written will be of substantial service to the novice—at least, it cost me many dollars and much vexation to learn it.

Lapeer, Mich., Mar. 23.

[Your instructions will be applicable not only for sheeting wax for Given presses but for rolls as well. Of course, for the latter it is not so important to have the wax of uniform thickness.—ED.]

HONEY PRODUCTION IN CALIFORNIA.

APICULTURE OF THE EAST AND THE WEST
COMPARED.

By Prof. A. J. Cook.

We all remember the story in the old spelling-book, which surprised our unsuspicious minds, when children, of the "bull goring the ox," and how "circumstances alter cases." One finds the same surprisingly true as he locates in a new country. In Michigan and the East, the case of "comb versus extracted honey" stands about this way: It takes an expert to succeed best in securing the beautiful comb, and he will not produce more than about two-thirds of what he could get if he worked for extracted honey. Yet he has a more beautiful and readily salable article, which brings, often, nearly or quite twice as much in the market as he would secure for an equal weight of extracted honey. Moreover, there is a peculiar fascination in the production of comb honey which is lacking in the work of extracting. On the other hand, it must be conceded that the novice will usually succeed better in running his apiary for extracted honey; will often secure double the amount, and in a poor season is not vexed with a lot of partially filled sections on hand at the close of the season.

I came to California intending to secure a small apiary, and expected to work exclusively for comb honey, as that always had a peculiar fascination for me, and I believed I could realize as great profit.

I was fortunate, a few nights ago, in having as my guests Messrs. Rambler and Wilder. We discussed this question, and I learned that, in California, the matter had a changed aspect, from the peculiarities of this region. Nearly all in Southern California produce extracted honey. In the first place, the honey-house, or cabin, is often very primitive. Ants are very numerous and obtrusive. It is easy to avoid the ant nuisance if we work for extracted honey, but very difficult, almost impossible, if we produce comb honey. Again, the bulk of the honey goes east, and is jarred and pounded for days. Extracted honey is safe in barrels or cans, and goes safely, and arrives at its destination in as good condition as it set out. Comb honey, on the other hand, is often seriously mutilated, and the eastern dealer must make a large discount to save himself. Hence the shipper is greatly disappointed when he receives his returns.

I was quick to see the reasonableness of these suggestions; and the very next morning I ordered a Bingham uncapping-knife. I shall still work for some comb honey, for I wish to make the acquaintance of those ubiquitous ants, and I must enjoy putting on and better taking off the sections. Perhaps I can find a home market, and so escape the dangers of shipment, especially as I expect to give the subject of marketing California honey most earnest study this coming year. Has not comb-honey production earnest advocates among California honey-producers? Let us hear from them.

Claremont, Cal.

SOME CALIFORNIA JOTTINGS.

ALIGHTING-BOARDS; A VALUABLE ARTICLE.

By E. H. Schaeffle.

In an issue of GLEANINGS an engraving shows the different styles of hives used in Europe. What struck me most was, that they all had wide alighting-boards that sloped out and down to the ground; and I have sometimes wondered why an alighting-board was not provided for the Dovetailed hive, as the two-inch projection is far too narrow. I have all of my hives set up about 18 inches from the ground, to get away from the toads, mice, ants, grass, and dampness of the soil, to say nothing of the added convenience in handling; and I find it a very simple and inexpensive matter to furnish each hive with a broad slanting alighting-board as follows: To a four-inch-wide strip of quarter-inch stuff nail two strips of $\frac{3}{8}$ stuff, with clinch nails. Have these strips project 3 inches beyond the side of the four-inch board, and nailed so that they will just come inside of the entrance on each side. Bevel off the top where it slips into the entrance to the hive, so it will drop down and give a slanting alighting-surface. The cross-sticks, it will be seen, must be

nailed on top of the board. On other hives, where the entrance is too small to admit of any thing being added, the boards are held in place by the strips being slid under light nails driven into the sides of the hive. This wide porch is a source of constant pleasure to the bees, which can be seen promenading back and forth in evident enjoyment, while the loaded workers work all the faster by being able to drop at once on arriving at the hive, and seldom miss this wide promenade.

TOADS.

The toad is too good a friend to quarrel with, as he destroys moths by the thousands on his nocturnal rounds, and he is easily kept from mischief by simply keeping the hive a foot above the ground and leaving nothing that he can crawl up on to the hive-entrance.

KILLING ANTS WITH INSECT POWDER.

I bought a lot of bees that the owner swore he would brimstone before morning if I did not remove them. On examination I found half of the hive filled with the large black wood ants; and, my! how cross the poor bees were! I turned the hive over and dusted insect powder freely between the combs filled with the ants, and exterminated them. I have frequently used it on the trails of the ants, and have never seen that it had any injurious effects on the bees. Where the ants are not making their home in the hive, but simply carrying off food, a mixture of honey and Paris green will be carried away by them to their nest, and exterminates the colony. When this poison is used, care should be taken to place the mixture under a tight box and leave a space just large enough for the ants to enter, but effectually keep out the bees.

YELLOW-JACKETS.

These yellow-coats are sometimes troublesome; and, from gathering up the larvæ brought out over night, and left on the alighting-board, they grow bold and enter the hive; and, when their entrance is disputed, I have seen them conquer an Italian bee and carry it away. Their well-known fondness for fruit, and their ability to tear and cut into fruit and grapes, often brings the honey-bee into disgrace and its keeper into trouble. I find two ways of extermination equally good. One is to bait the common gauze fly-trap with raw meat; the other, to bait a piece of raw meat with strychnine, and hang it where the yellow-jackets and nothing else can have access to it.

BEE BIRDS.

These troublesome birds may be of some value to the fruit-grower, but they are a costly benefit to the bee-man; and my remedy is the shotgun. Cruel, do you say? Well, perhaps it is; but I have seen as many as 25 bee-birds at one time, at work catching my bees, and human nature couldn't stand that any more than a shepherd would tolerate a wolf among his flocks for his services in the destruction of rabbits.

ROBBER BEES.

I have found only one effectual way to stop robbing. I take a piece of 4x4 scantling and saw out a groove $\frac{1}{4}$ inch square on one side. I then place this across the entrance so that the bees must pass in and out through this groove. At the same time I open the ventilators, shade the hive, and look after the block of wood to see that the passageway is not blocked by dead bees. I have a box with a few bees in it that have lost their queen. The robbers do not enter this hive, but bounce down on the alighting-board and garrote the guards. The robbers rush up to the guards, who put out their tongues and evidently disgorge their honey, as robbers do when confined to a hive, and feed its stores through wire mesh to other robbers on the outside. This latter is quite common, but I have never seen the "stand and deliver" game worked by the robber bees before.

TRANSFERRING BEES.

Has any one tried drawing the bees up into a hive with full sheets of foundation and at least one frame of brood and supplies, then placing a queen-excluding zinc over the new hive, setting the old hive on top, and at 22 days slipping a bee-escape under the old hive, and having the bees all go down into the new hive? I believe it would work with that frame of brood in the lower hive. By this method the bees would be all together. You are sure of a queen in one of the hives; and if bad weather follows, the bees have their stores right at hand. I prefer transferring at once and done with it. With a long sharp knife *kept hot* I can readily cut out the combs and slice off any bulges, while a mixture of three parts rosin and one of wax will hold any comb if enough is used. Beeswax alone won't do, as it is too greasy and doesn't stick to the wood. When thus transferred the job is done, while you would be drumming by the other way. The bees have all their comb ready built, and proceed to business.

ENTRANCE DIAGNOSIS.

Mr. Dayton is good on that; but why did he omit to state how a queenless colony could be picked out by entrance diagnosis? Go out to the bees any morning, when they are packing in pollen; and when you have found a hive where the bees bring in no pollen, that hive is queenless; for, as the bees have no brood, they need no pollen and don't bring it in.

ENTRANCE FACE.

Where bees sit "shoulder to shoulder," and all "face front" alike, it is undoubtedly very convenient for the apiarist, both in watching and working the bees; but by that arrangement queens on their virgin flight get into the wrong hive on returning, and you soon have a large per cent of queenless hives. To obviate this I set my hives, one facing the east, the next the southwest; one to the west, and then allow about a four-foot space to the next hive. This

economizes space, and gives each hive a different face in each lot of three.

Murphys, Cal., Mar. 18.

JAKE SMITH'S LETTER.



*A. I. Gleanings—*dear Sir:—Mr. Dinant has bot a new place and moved onto it. It's much closer to our place, and we visit back and fourth a good eel. The other day Mr. Dinant and his wife was to our house, and our dot-

ter Carline was a showin her new cloak. It had sleeves like elephants' ears, and come up so high that you coodent see her face when she stood sideways. Mr. Dinant began to plague her about it.

Says he, "Do you have that kind of a sleeve, Carline, because it's becomin to your style of beauty, or do you have it like the mainsail of a ship to help you along in a high wind?"

"For neither," says Carline; "it's the fashun. You woodent want me to look like I come out of Noah's ark?"

"Well, you don't," says he. "If you'd come out of the ark in that rig, you'd frighten all the animals. Now see here," says he, "do you expect wimmen will ever have a chants to vote so long as they're so weak-minded? The fashun says cloaks must have no sleeves, and you all freeze your arms off. Then it says elephants' ears, and elephants' ears it is. Talk about puttin the rains of government in the hands of silly wimmen without backbone enuff to stand out agens't a fashun, no matter how hidgeous it is, if only the leaders give the word! You don't find *men* led around in that style."

I begun to see mischief in Carline's eye, and, says she, "Oh, no! you men never let any one lead you around. It seems to me I heard you and pa talking about puttin good clean men in office, and you said it would never do to have a drunken sot like Barney Hill put up for a candydate just because he had lots of money, and could controll votes; but for all that the leaders of your party put him up, and you both walked up like little men and put in your votes for him. Oh, no! *you're* never led around to follow fashun. And then," says she, "your party said the tariff must be so and so, if the country was ever to have prosperity, and you two was sure nothin

else would do, you were very sure. But when your party at Washington found that might make trubble for them at the next eleckshun, and turned around just exactly opposite, you haddent a word to say. Oh, no! no fashun leaders can pull you around."

"Now see here, Carline, that isn't fair," says Mr. Dinant. "We werrent talking about politicks, we were talkin about fashuns. A man has to follow his party if he don't want to be looked down on, but you don't find men all followin like a lot of sheep when it's somethin where no principle's involved."

"Henry," says Missus Dinant, "how do you spell *are*?"

Mr. Dinant looked puzzled, but I think he was kind of glad to change the subjeck. "How do you spell *are*?" says he. "Why, *a-r-e*, of course."

"Is it wimmen or men that make the dickshenary?" says his wife.

"Men," says he.

"So it's men that put that last *e* in *are*," says she, "and you men all follow the fashun insted of spellin it common-sense like, *a-r*."

"But *a-r-e* is the right way to spell it," says he. "That's not followin any fashun, that's only spellin it right."

"What makes *a-r-e* right any more than *a-r*?" says she.

"Why, because evry buddy spells it that way, and it's that way in the dickshenary."

"And if evry buddy spelt it *a-r*," says she, "then *a-r* would be the right way, and it would be that way in the dickshenary."



"I spose so," says he. "Of course, there's no use in that last *e*, but it's there, and there's no way to change it."

"No, it can't be changed, just because it's the fashun," says she. "And that's where you're worse than the wimmen. A silly fashun

has made you spell that word with an *e* on it for a hundred years, and I don't know how much more, and you haven't backbone enuff to change it, while the wimmen change their fashuns."

"But there's no way to change the spellin," says he.

"Isn't there?" says she. "You know they used to spell *Atlantic*, *Pacific*, *optic*, and all such words, with a *k* on the end. Some one had backbone enuff to leave off the *k*, and now evry buddy does it. Then we had *honor* and *favor* and such words with the letter *u* in the last syllable. They still spell that way in England, but nobuddy does this side of the Atlantic otion. There's no law that makes you keep on spellin so many words in a foolish way, and I think you better let up on Carline for followin the fashun when you're doin a good eel worse."

"Maybe I better not spend any more time tryin to spell in the fashun," says I.

Zed had been settin quiet, and seemed to be reedin GLEENINGS. He spoke up then, and, says he, "I've counted over a hundred sight letters on one page of GLEENINGS. If they would leave out all the sight letters we could have a good bit more reading in it, and lern more about bees and onyions."

JAKE SMITH.

CALIFORNIA ECHOES

By Rambler.

Looks rather discouraging for a crop of self-hivers, non-swarmer, traps, etc., for the coming season.

She said pa always stopped so long to talk when he met a bee-man that she felt like flying. The fidgety thing! I've no doubt that pa sometimes wished she would.

The best brush for removing bees from combs is the Mexican fiber duster. It has quite a voluminous head and a rolling motion with it; just cleans a comb instantly. This excellent "machine" is sold by novelty dealers.

It is ducks this time that can not be successfully reared where bees abound. If they sip water from the same pond, the voracious duck swallows the bee, taking it for an innocent fly. The bee thrusts its sting into the internal ramifications of the duck; result, a dead duck; post-result, bees must go.

Good authority says that sugar syrup, when fed to the bee, is not changed by the bee, but from absorption of chemical matter from the comb in which it is stored. Let the bee store the syrup in old comb, where it comes in contact with cocoons instead of wax, it remains sugar syrup. Store it in fresh new combs, and it absorbs a wax aroma, and thus the so-called change. Apropos, see what Dadant says about rendering wax with acids, page 211, GLEENINGS; it destroys its perfumery, odor, etc.

THE LARK.

He rose, and, singing past from sight,
A shadow kindling with the sun,
His joy ecstatic flamed, till light
And heavenly song were one.

That is what the lark has been doing all winter in this sunset country. The mockingbird is now prospecting around for domestic purposes. The Alpine bluebirds are unusually plentiful and brilliant now. Oh, yes! we have some birds in California.

Three more live California bachelor bee-keepers have gone and got married—Mr. Holley, of Fillmore (I bet Mrs. McIntyre had a hand in the match), Mr. Zanft, of Riverside (just as though there were not odd names enough now in the world without raising any more); then Prof. Guenther, of Redlands, the highly accomplished violinist, played right into the arms of Cupid. Well, they must abide the consequences. The Rambler has given them fair warning in the past.

Apropos to the above, I would call attention to the fact that a Chicago woman, who has been married seven times, says that all men do not bear suffering alike. Nothing like experience to teach women these things.

TO SAVE HIS BROTHER.

SANTA ANA, February 17 — George Emerson, a prominent young man of this city, shot and killed Louie Yorba, a half-breed Mexican, at 8 o'clock this morning, in Santa Ana canyon, about twenty miles from this city, during a quarrel over the possession of a Government claim which young Emerson and his older brother had recently filed on. It seems that the Mexican took possession of the claim during the absence of the Emerson brothers, and upon their return attacked the older brother with a club, hoping to drive him off the claim, whereupon young Emerson pulled a gun and fired, killing Yorba just as he raised the club to strike his brother. Both young men drove to this city at once and gave themselves up. The one who did the shooting is now in the custody of the Sheriff. Yorba's body was brought to this city to-night. He was shot several times, one bullet penetrating the vicinity of the heart. It is claimed the shooting was done in self-defense.

The Emerson brothers spoken of above are successful bee-keepers; and the claim over which the fatal quarrel occurred was filed and occupied for a bee-ranch.

SUPERS.

THEIR RELATIVE MERITS AND DEMERITS SET FORTH; THE SINGLE-TIER WIDE FRAME PREFERRED, AND WHY.

By R. L. Taylor.

Dr. Miller writes me, in response to some notions I advanced in a letter to him, that he was going to tear me into little bits; so, perhaps, in anticipation, I am warranted in undertaking to criticise some remarks he makes in GLEENINGS of March 1, page 190, on the above subject, which I think are fallacious, and calculated to mislead the inexperienced.

I have not used the section-holders, but have used the T supers to some extent, and the Heddon super and the wide frames very largely.

The T supers I have unanimously discarded. They have one advantage; and that is, they can be emptied rapidly, but not nearly so rapidly as can the Heddon super, if the time required to get the separators and the "little top separators" out of the honey, and then what a multitude of the two kinds of separators there are, either to clean and look after, or else to renew! Besides, I think it is fair to say that at least twice as much time is required to get the sections fixed in the T supers, particularly if the sections, as most one-piece sections do, begin to assume the diamond shape.

But Dr. M. says, "The Heddon crate will not allow the use of separators, and that is a necessity when honey is to be packed for shipping." That is news in Michigan. I have produced a good many tons of honey in these cases, and never had any trouble with the packing. A half-dozen sections in a thousand would cover on the average those that are rejected, scarcely more than when separators are used, for occasionally one will be fastened to a separator, and so must be excluded. In a good season there would be practically no difference; substantially all are readily packed. Of course, full sheets of foundation are used. Then the Heddon case has the added advantage that sections filled in them contain considerably more honey, so that less foundation, fewer sections, and fewer shipping-crates, are required. For a good season I ask for nothing better, all things considered; but in poor seasons it is liable to the objection that the bees with their spare time can propolize the top and bottom of the sections with too much facility, and the T super is equally liable to the same objection.

Dr. M. says of the wide frames, that they are so generally discarded it is hardly worth while to discuss them. I do not know how generally they are discarded; but the truer *that* is, the greater the need of discussing them, for I consider the single-tier wide-frame super without an equal, taking one season with another. Cleaner sections of honey, more completely filled and capped, can be obtained in it than in any other I have ever tried. This is the fact: I shall not stop to inquire for the reason. The first cost is but little if any more, and the parts are all permanent and durable. It takes less time to fill it with sections than it does the T super, and scarcely more to empty it, and it will be found to contain on the average a less proportion of *partly* filled sections than other supers. But, of course, it must be accurately made. The top and bottom bars of the frames should be cut a little bowing, and both nailed to the end-pieces bowing in, and this bowing tendency should be exaggerated by the method of fastening on the tin separator. I feel sure that, if comb-honey producers generally would try wide frames thus made, and learn how to use them, it would not be long true, if it is now, that they are generally discarded.

There are some other statements of the doctor which should have examination, but this must suffice for the present.

Lapeer, Mich., Mar. 10.

[Say, Doctor, it does us good to see Taylor get after you so hard, apropos the T super.—Ed.]

ARTIFICIAL COMB.

WHAT THE GERMANS HAVE BEEN DOING.

By Dr. C. C. Miller.

Before me lie two samples of comb with which the bees have had nothing to do except to secrete the wax from which they were made. When I say *comb* I mean comb. I don't mean foundation with unusually high side walls. I mean *comb*. And as I look at it and admire it, I can not help thinking that again the boasted inventive genius of the Yankee is outdone by what we are accustomed to think of as the plodding German; for this is no triumph of American genius, but was made in Germany by Otto Schultz, the man who has done much to bring the manufacture of foundation to a high state in Germany. The inventor, however, is Pastor Warnstorf. The samples were sent to me by the kindness of C. J. H. Gravenhorst, the able editor of the *Deutsche Illustrierte Bienenzeitung*. Each is about two inches square.

While an experienced bee-keeper might easily distinguish between these samples and the natural product of the bee, he must perforce admire the beautiful finish of the product, and its perfection with regard to uniformity. The one piece is worker, the other drone. The worker comb is an inch in thickness, the cells being of proper depth for worker brood. A thick septum makes it necessarily thicker than natural comb when it is new, but old worker comb will be found an inch thick. It has the appearance of worker comb after it has been shaved by the uncapping-knife for extracting. I count 11 cells to $2\frac{1}{2}$ inches. We generally count worker comb 5 cells to the inch. That would make $12\frac{1}{2}$ cells to $2\frac{1}{2}$ inches instead of 11, making it seem that the cells of the present specimen are wider than the natural. I suppose, however, that they are the same, for there is more wax in the walls than in natural comb.

The drone comb has 9 cells to $2\frac{7}{8}$ inches. Natural comb would have $9\frac{1}{4}$ cells to the same measurement. I suppose the thickness of the cell-walls makes the difference. The cells are about $\frac{1}{8}$ of an inch deep, but they are on only one side of the comb. There is no reason why they can not be made two-sided as well as the worker comb. But it is considered better to have them one-sided, as they are not desired for brood-rearing, but for honey only. One can readily see the advantage for extracting, to have combs that need no reversing. They can be put into the extractor, turned slowly at first, then the speed increased to its

highest, without any danger of breaking from the weight of honey on the opposite side.

Pastor Warnstorf's invention was made public more than a year and a half ago, and at that time it was thought that bees would not use such combs for brood-rearing. Further trial has shown that, when put in the middle of the brood-nest, the bees gnaw down the cells to the proper depth and rear brood in them. After all, that matters not, for who wants to put extracting-combs in the middle of the brood-nest? So far, I think not much has been said in favor of using these combs other than for extracting-combs, one objection to using them in the form of worker comb being that fewer bees could be raised with the same surface of comb. In the same frame the natural comb would contain a fourth more brood. Yet it would be no small advantage to have worker combs that could be stuck lightly in a frame with little care for fastening, no wiring, no stretching, and every comb as true as a board.

It would be unwise at this time to say that this artificial comb with cells full depth will come to be as largely used as foundation, and it would be still more unwise to say that no importance attaches to it. Some one may say that, if it has been before the public for a year and a half without more being heard of it, not much is likely to be heard from it. Please remember about the first progress of comb foundation. As far back as 1857, or earlier, Mehring made his first foundation; but it was something like ten years before any thing of the kind was seen in this country.

Certainly very great importance has been attached to the matter of making high side-walls to foundation, and here are side walls to any desired height. Even if the cells should be only half depth it would be a great advantage. One important question relates to the cost. At present I believe artificial comb is sold at about the same price per pound as foundation. At that price, of course, it will cost more than foundation for the same surface. In an article written by Pastor Warnstorf, early in its history, he speaks about making three feet to the pound. How much it differs now I do not know.

If this article should come into general use, there will undoubtedly be improvements in its manufacture. It was a good many years after Mehring's first trial before friend Root turned out such beautiful foundation-mills in Medina. Three years after the first foundation was made, it was said triumphantly that such progress had been made that one person could easily make more than a hundred sheets a day. How many hands would the Roots and the Dadants now have to employ if one hand could turn out only a hundred sheets in a day? So we may expect improvement in this.

It would be quite handy if such combs should

come to be a staple article, so that a raiser of extracted honey, running short of combs, could send to the supply-dealer and at once put in his hives all he needed. Bulkiness would make freight or expressage more, and a doubt may arise as to their carriage without breaking. I should expect no difficulty on this latter score. The samples I have received came direct in the mail from Germany, put loosely into a wooden box with no packing whatever. Some of the outer cells are broken, but the remainder seem as perfect as if they had just left the press.

Marengo, Ill.

[Now, Dr. M., we are sorry we can not agree with you. A sample of the very same make of comb is before us. While it is true that it is quite an achievement, it is a long way from being perfect. It is so heavy and clumsy, in our estimation, that it can never come on to the market. Why, a piece of it weighs three times as much, by actual test, as the same size in square inches of comb built from *heavy brood* foundation. Its cost, then, must necessarily place it away beyond what bee-keepers can afford to pay, even if it were practicable. There is a waste of brood, a waste of room, a waste of wax, and a waste of inventive genius that might more profitably be spent in other directions. After all, foundation is practically drawn-out comb in the flat; for in from 24 to 48 hours, under favorable conditions, it will be converted by the bees into comb. There is not one bee-keeper in a thousand who orders his hives nailed and painted, and all because of the extra transportation charges on such goods set up; therefore we argue that, even if artificial comb could be made in its perfection, bee-keepers would still order foundation, because the comparatively small bulk of it represents a very large bulk of comb, and because the transportation charges of the comb would be beyond their reach at present prices of honey.

The samples of artificial comb sent out by Mr. Weed a few years ago was, in our estimation, very much nearer perfection; and while the bees apparently accepted it, they soon showed their aversion to it, and it was abandoned. No, no; we do not wish to stand in the way of progress, nor discourage invention; but it seems to us that our German friends are pursuing a will-o'-the-wisp.—Ed.]



POLLEN NECESSARY FOR BROOD-REARING.

Question.—Is it necessary for bees to have pollen in the hive for them to raise brood?

Answer.—I believe that, if such a condition were possible as not having a single particle of pollen in a hive, and where none could be obtained by the bees from any source, no brood could be reared and brought to perfection; but I doubt the possibility of there being such a condition as absolutely no pollen in any hive containing a colony of bees that has passed the winter in such hive. All honey contains more or less floating pollen; combs in which pollen has been stored previously, contain many par-

ticles of the same, according to Prof. Cook; and if nothing else is available, bees will collect fine particles of wood, and use in place of farina from flowers, as I have frequently seen them doing from a pile of fine sawdust which was taken from the shop where I used my planer-saws. Elisha Gallup told in the *American Bee Journal*, years ago, how he hived a swarm of bees so late in the season that they built only three pieces of comb, about as large as the hand, and, as an experiment, he fed them honey all winter, and in early spring they commenced brood-rearing before being taken from the cellar, finally building up a fine colony and storing considerable surplus honey that season. I have had similar experiences, but find that the less pollen there is in the hive the less brood will be reared; and where there is scarcely any pollen, or, as most people would say, none at all, there would be but few cells of brood raised, and this brood be scrimped in food, and appear weak and sickly. Nothing incites brood-rearing like plenty of pollen in the hive, with the necessary honey; and with the advent of new pollen, brood-rearing commences in earnest. I have fed the bees meal and flour many years, thinking that it would take the place of pollen from the flowers; but after a careful watching I am satisfied that such is not the case, and I doubt its paying to feed bees in this way, aside from the fun there is in seeing the bees work on the flour, where pollen is to be had from the flowers in from 40 to 50 days previous to the honey-harvest.

ROYAL JELLY FOR QUEEN-CUPS.

Question.—In order to raise queens out of the swarming season, where do you obtain royal jelly to put into cell-cups?

Answer.—At any time when there is young brood or bees in the larval form in the combs, there is no trouble in obtaining royal jelly, or, at least, I never found any. All you have to do is to make a colony queenless having such larval bees; and in from three to five days after taking away the queen you will find cells enlarged and the occupant swimming in royal jelly, or at least to a sufficient extent so that enough can be obtained to start from 12 to 24 cups sufficiently for rearing that many queens. If you do not wish to make an extra colony queenless you can use Willie Atchley's plan of lifting the cocoon out of the cell containing the little larva you wish for a queen, and in this way the larva is already supplied with sufficient food to last till the bees put in the royal jelly to change it to a queen. I say you *can* do this. By so saying I mean if you are as successful as Willie is; but I will also say that, if you are, you can do better than I can. After several trials I have gone back to the jelly plan, as I fail in many instances in separating the cocoon from the cell without tearing it; and if I succeed in doing this the bees are not suited with my "botch" work in placing them in the cups,

so they pull them out and roll them out at the entrance of the hive. I wonder how many have made a success of this plan aside from Willie Atchley. One reason for my not making a success of it is, I presume, that I am becoming a little shaky as I grow older, so that I can not do fine work as I once did, owing to the trembling of my hands.

QUEENS NEVER TAKE A CLEANSING FLIGHT.

Question.—Why is it that queens never take a cleansing flight? Of course, clipped queens can not. Can it be possible the bees take care of her?

Answer.—As nearly as I can find out, the queen is a privileged person, so to speak; that is, they drop their excrement when and where they please. Whether the bees clean this off the combs or not, I can not say, or whether the case is different with the queen inside of the hive than it is when they are caged, I do not know; but this I do know: I have repeatedly seen queens void their feces in queen-cages, while virgin queens kept in a queen-nursery do this often in handling the nursery-cages. My idea is, that, as there is only one queen in a hive, and the amount of waste matter thrown off is so little, it is not of enough importance to the existence of the colony so the queen should go out for a cleansing flight as do the drones and workers. If any one has different views on the matter from the above, I should be pleased to hear from him; as, if I am not much in error, this is a matter in bee-lore which has never been touched on before.

ENAMELED-CLOTH COVERING FOR BEES.

Question.—Is it a good plan to use enameled covering over the brood-frames in winter? If bees need water in summer, why do they not need it in winter also? and with the enameled cloth over the frames, they have water in winter as well as in summer.

Answer.—This is quite ingenious, to say the least; and if I really believed that bees needed water while in winter quarters I might be persuaded to try enameled cloth for that purpose, as it would be much easier supplying water in that way than by giving it them in a sponge at the entrance, as has been recommended so many times, where bees were in the cell lar. But bees use water only when breeding rapidly; and as winter breeding is poor economy, and something I do not wish, I do not care to supply that which brings on what is a damage to me, for I believe winter breeding to be a damage to any bee-keeper residing at the North. I have tried enameled cloth several times over the cluster of bees during winter; and in every case where tried, those colonies did not come out nearly as strong as did those with absorbents over them; while many colonies, in proportion to those so tried, died or were so weak as to be nearly worthless. Some seem to like enameled cloth over the bees in winter; but with me the mois-

ture arising from the bees condenses in drops on the cloth; and when these drops become so large that they fail to hold to the cloth they drop down on the bees, thus keeping them damp, and in a condition not suitable to their wintering in the most perfect order. Enamelled cloth for bee-quilts would never have been thought of, in my opinion, were it not for its non-sticking character—that is, a sheet of enamelled cloth will not be glued down by the bees so but that it readily cleaves from the top of the hive by a little lifting by one corner. This makes it desirable where a hive is to be opened often, as in the case of queen-rearing or an experimental hive.



HONEY FROM THE NEW OPIUM-PLANT.

Mr. Root:—From a recent number of the *Oil City* (Pa.) *Derrick* I take the following:

The increased cultivation of the poppy in various parts of Europe has, it is said, led to a marked growth in the percentage of opium contained in honey, the properties of which are much influenced by the flowers from which the bees gather it.

Now, what I should like to ask is: Do bees work on the poppy? or is the above simply a newspaper "yarn"? If the bees do work on the poppy, would the honey therefrom contain enough opium so that a person would notice the effects of it, after eating the honey?

Corry, Pa., Mar. 1. L. B. GILMORE.

[Will some of our foreign readers please give us the desired information?—ED.]

TOP-BAR $1\frac{1}{2}$ INCHES WIDE.

One season's use of ten Tinker hives with top-bars $1\frac{1}{2}$ wide, $\frac{3}{8}$ thick, has satisfied me that I don't want any more narrow top-bars in my apiary, as well as honey boards (the latter I have never used). Judging from one season's use, I don't think the queen will lay as well in these shallow hives. What a pleasure to lift the honey from above these wide top-bars! no brace or burr combs to any extent, and in many none at all.

PASTE FOR LABELS.

I use ordinary flour paste, *boiled thick*, and have no trouble, providing the labels are not put on when the pails are cold enough to chill the paste.

O. H. HYATT.

Shenandoah, Ia.

THOSE GIVEN PRESSES.

When you get to making those Given presses, here's an order awaiting you. Quote me your figures at the earliest day. I have used in my own yards something over 500 lbs. of foundation of different makes during the last three years, and I know something of what I need.

Dadant's is excellent, but the press is just a trifle the best, in my opinion. When you get to making presses, be sure to get cells right side up for strength. I have had foundation that was wrong side up. There's a right and wrong way, though no doubt you know this.

Glenwood, Fla., Feb. 12.

A. F. BROWN.

[The Given-press problem is a more difficult one than we at first supposed. We are not satisfied with the old dies—they are too crude to make a really nice article of foundation—one that is pleasing to the eye. We have made an extra set of new dies, but with no better effects. Thus far our experiments show that, so far as appearance is concerned, the roller foundation is far superior. The Given sheets look clumsy, and do not give that nice clear transparent effect that can be obtained from the rolls.—ED.]

THE USE OF VASELINE IN APICULTURE.

Who has not been annoyed by the bees sticking frames together? Who has not been greeted with a hailstorm of stings when, on taking a frame from the hive with increasing vigor, it suddenly breaks loose with a snap? It is fortunate for every bee-keeper who uses movable frames that do not have to be cut to a thirty-second of an inch, and which do not have to be absolutely perfect. Well, Dr. Dubini has discovered a means whereby the propolizing of bars and frames, if not entirely done away with, is so greatly reduced that frames can be put in and taken out in such a way as to spare the bees themselves much annoyance, and also their owners from being stung. This remedy is yellow vaseline, which is applied to the grooves and bars, and different points of contact, with a small brush. It is an extremely cheap substance, and therefore within the reach of all. Dr. Dubini uses it in his hives for the purpose of preventing the top-bars from being fastened to the under side of the cover. Vaseline works to the best advantage when applied to metal strips, or tin rabbets or frame-ends, which especially, when well cleaned, and smeared with vaseline, admit of easy insertion or removal.

Medina, O., Mar. 29. KARL R. MATHEY.

[We have several times referred to the use of vaseline or grease as a preventive, to a large extent, of the deposition of propolis. We are sorry we can not speak from experience; but several have within the past few years spoken highly of it. Whether Dr. Dubini is the original discoverer of its use is doubtful.—ED.]

A CASE OF FOUL BROOD IN FRANCE.

M. Sevalle, editor of the French bee-journal *L'Apiculteur*, reports an interesting case of the cure of foul brood. The afflicted colony was found to be queenless, although still having sealed brood in four of its ten frames, the brood being completely diseased. May 2 the combs were taken out, the brood entirely cut out, and the combs replaced. The amount of bees was about $1\frac{1}{4}$ lbs. Naphthaline was placed on the floor and on the frames. Two weeks later the population was sensibly diminished;

a piece of drone comb 2 by 4 inches had been built in the vacancy, and eggs and brood of laying workers were present. A nucleus of less than a pound of bees, having a good queen, had been received three days previously from Italy, and was added to the colony under treatment, the queen being caged. The queen was freed two days later, and the naphthaline continued. The colony prospered, with no trace of foul brood, and October 18 it was one of the best colonies in the apiary. C. C. MILLER.

Marengo, Ill.

MAKING SUGAR SYRUP BY THE COLD-WATER PROCESS.

Dr. J. T. Beall, March 15, page 236, hits the nail squarely on the head when he tells how to make syrup that will not sour or granulate. My plan is exactly on the same principle, but I do it in a little different way. I have had over 20 years' experience as a druggist, and had a good deal of trouble at first in making syrups for the various uses of the store in summer time, when we used large quantities for the soda-fountain. By the hot-water process we could not always get a uniform quality. If too thick it would crystallize; and if too thin, if not used soon, it would sour. Many years ago we commenced the cold-water process, and ever since we can make a uniform quality that will keep, I don't know now long—probably indefinitely, without souring or crystallizing. Our plan is to take a 10-gallon keg (a barrel could be used if necessary in the same way), knock out the head, and with it make a false bottom that will fit inside of the keg, boring the false bottom full of small auger-holes, putting in pegs to hold it up about 6 inches from the bottom of the keg; then take white flannel, about three or four thickness, and put it over the false bottom, stuffing it in around the edges so it all has to percolate; then we dump in granulated sugar, about half full, then pour in cold water and let it percolate in the cellar or some room, and no kitchen or stove mussed up. The first run we draw off from the faucet below and dump back; after that the syrup is fit for the queen's taste, or the bees' either. All you have to do afterward is to draw off the syrup and add more sugar and water. We have always fed our bees with this, when they needed winter feeding; with a barrel a large quantity could be made in a short time.

M. F. TATMAN.

Rossville, Kan., Mar. 17.

[It begins to look now as if the cold-water process was feasible and practicable for the bee-keeper. We shall certainly try it in the course of the season.—Ed.]

HARPER'S MAGAZINE ON BEES AS FERTILIZERS; SWEET CLOVER FOR STOCK.

I take the liberty of calling your attention to an illustrated article by W. Hamilton Gibson, the naturalist, in the current number for March, 1894, of *Harper's Magazine*, on "Welcomes of

the Flowers," which is very pertinent to your side of the discussion on bees and blossoms. Please read it.

I can also indorse, from personal observation, what your contributor, Mr. Boardman, says of sweet clover. It is all a popular mistake that stock will not eat it, and I believe that, where alfalfa will not succeed, sweet clover is a valuable addition to farm crops. Stock have also to learn to eat alfalfa before they will take to it readily. I raised a patch about 15 years ago, and turned the family horse on it. He did not touch it, but ate the grass and weeds; but in the fall, when light frosts killed the grass and weeds, he grazed the alfalfa; and ever after, if he was put on that patch, he took the alfalfa first. It is also true that alsike clover will do well on sod. I have a good catch of alsike on Wild Creek bottom land, sown the last of August.

A SUGGESTION.

In behalf of the beginners and amateurs in bee-keeping I respectfully make this suggestion: That you have a series of articles on manipulating bees and hives, copiously *illustrated* with reproductions from photos of an expert apiarist in the act of making such actual manipulations. As to a novice, a little of the *show how* is worth a great deal of the *tell how* to do such things, the illustrations to be accompanied with brief and clear printed directions. This, I believe, would make a new departure in bee-journalism that would help to give GLEANINGS a boom among beginners and persons interested in bees, and you have the apparatus at hand—bees, hives, Kodak, and apiarist. Perhaps, as the Dovetailed hive is in pretty general use, it would be a good idea to employ it in these object-lessons.

WM. DALTON.

St. George, Kansas, Mar. 21.

[Thanks for the suggestion on the "show how." We will try to carry it into effect this summer. We shall be glad to refer to the article in Harper's.—Ed.]

DISGUSTED WITH YELLOW BEES.

I am disgusted with yellow bees; no good for comb honey. I have tried the five-banded, and would not take more of them as a gift. I intend to get rid of what I have. I purchased from the best breeders. I could give names if required. Hurrah for the dark Italians for honey—that's money.

WILL ELLIS.

St. Davids, Ont., Mar. 14.

Can you tell me some way to destroy the little short-tailed mice? They are so small that they can squeeze into the entrance of the hives, and are making themselves very troublesome.

Carpenter, Ill.

EDW. E. SMITH.

[Use "Rough on Rats." Put inside of boxes perforated with holes large enough to admit the varmints. This arrangement will keep the poison away from domestic animals, and yet let the mice feast until they die.—Ed.]



Above all, take the shield of faith, wherewith ye shall be able to quench all the fiery darts of the wicked.—EPH. 6: 16.

REPORTS show that bees are wintering and springing finely all over the country.

"OBSERVER," in the *Progressive Bee-keeper*, hints that "GLEANINGS and the *Progressive* have formed a mutual-admiration society." Didn't know it before—at all events, the *Progressive* has grown so fast and so well that we couldn't help but notice it.

We are having moderate April weather. At the present rate the bees will get through the month in good shape. So far as we know, we have not yet at this date (April 7) lost a single colony, and they are all outdoors, just as is shown in our last issue, page 270.

REFERRING to Mr. Doolittle's article in another column, we should like to know whether any one else has succeeded in removing the royal jelly and the larva, on the plan proposed by Willie Atchley some time ago, and transferring it to the queen-cell cups.

WITH this issue we again give you 52 pages. In fact, we have been running 8 pages extra ever since the season opened. We are obliged to make this enlargement temporarily in order to make room for some of the very acceptable matter now on hand, which, if held over very much longer, will be out of date. By the way, our contributors must not be disappointed if they do not see their communications in the "next issue" after writing them. We very often hold over manuscripts until they are more seasonable.

"BEE-BOOKS BY THE CARLOAD."

THIS is a kind notice that Bro. York has in the last *American Bee Journal*:

The A B C of Bee Culture is a grand good book. In GLEANINGS we just notice that Bro. Root is getting out the 62d thousand of this well-known work. That means a big pile of books. Let's see; we believe each copy weighs two pounds, so that would make just 62 tons in all—several carloads of just one bee-book! But that's just like Bro. Root—always doing big things.

Friend York is quite correct in his calculations, but we had never thought of it in just that way before. Considering the tons and tons of catalogs, and other bee and agricultural books, to say nothing of every issue of our journal, 62 tons would represent but a very small part of the matter that actually leaves our press. It has to run 14 or 15 hours a day, and it is a large Cambell book-press too, printing 16 pages like this at every impression. By the way, we are glad to notice that G. W.

York is to be publisher of the new "Bee-keeper's Guide," written by Prof. Cook, and the price is to be raised to \$1.25 instead of \$1.00, as heretofore. The book is well worth the money.

GLUCOSE-FACTORIES AND DISTILLERIES.

We have just had a very pleasant call from J. B. Hains, of Bedford, O. He is one of the most extensive bee-keepers of the State; and when he makes his annual visit here we are quite sure to discuss some of the latest developments. Of course, our conversation naturally turned to the subject of glucose. Said we, "Do you know of any legitimate use for the stuff?" He looked doubtful for a moment, and said, "Yes, I do. It is good for sticking labels to tin or glass, and that is all it is good for." We expressed the hope, which he heartily indorsed, that every glucose-factory, every distillery, and every other stomach-destroyer, might some day be excluded from the land, by a cast-iron law that would *exclude*. If some of our legislators are influenced for their *stomachs'* sake, and the sake of some of their constituents' stomachs, to vote in such a way that distilleries can continue their nefarious business, we can not imagine how those aforesaid stomachs could influence legislators to vote for the maintenance of glucose-factories. There are so many who bow the knee to King Alcohol that it is a hard matter just yet to whip out the liquor-business; but while there are few people, comparatively, who mix glucose with foods, those few make such a large use of it that the problem is a most serious one.

SWEET CLOVER AND ALFALFA.

It may be well to have it understood that sweet-clover seed and alfalfa seed look exactly alike. I do not believe that expert seedsmen can tell, even with the aid of a magnifying-glass, one from the other; and this fact has given rise to some troubles already, and at least one expensive lawsuit. The seedsman sent a farmer sweet clover when he ordered alfalfa. We have not had any lawsuit, but we have had one expensive blunder in that direction. And this has taught me a way of distinguishing one from the other. Sweet-clover seed (sometimes also called Bokhara) has a distinctive strong odor like that of sweet-clover blossoms or the green plant. After you have once got the smell of it you will never forget it. Well, even a little pinch of the seed has this distinctive sweet-clover smell. One of the iron-clad rules of our seed-room and whole seed department is, that every bag must be labeled on the outside, and at least one label also be put down among the seed. If one label gets torn off or lost, the other can pretty surely be found. If everybody who handles seed would take similar precautions it might save much trouble. Sowing seed on several acres of ground, and then giving it care and cultivation, only to find

out, just before maturity, that it is something you did not want, and have no use for, is rather serious business.

A. I. R.

THE PROFITS OF PUBLISHING A BEE-JOURNAL.

THERE is a certain fascination about starting a new bee-paper; and very few of those who embark in the doubtful enterprise first count the cost. Bro. Sage, of the new bee-journal entitled *Success in Bee Culture*, gives his readers the benefit of this very facetious bit of information:

For the benefit of those young men who took Horace Greeley's advice to "go west," and now feel "divinely called" to start a bee-paper, we append the following table, which shows one month's business at *Success's* office, ending Jan. 1st. This is not figured down exactly to a cent, but is nearer the truth than one might think at first reading.

EXPENSE OF DEC. 1ST ISSUE.

Composition	\$18 75
Cover paper.....	2 64
White paper	7 50
Stitching and trimming.....	2 50
Postage on paper.....	1 00
Writers.....	4 50
Letter postage.....	3 00
Editor's time on making up the forms, and presswork (40 hours).....	00
Editor's time in writing editorials, and in correspondence explaining why the paper is late (400 hours).....	00
Editor's time reading bee literature, and thinking how to make his paper pay (400 hours).....	00
Total.....	\$39 89

RECEIPTS.

3 subscriptions, three months each ...\$	45
100 postals asking for samples.....	00
50 letters wishing us success (thank you) ..	00
5 letters asking us why paper is late. ...	00
1 letter informing us that our paper abounds in mistakes.....	00
1 letter saying they would rather have the blank paper before it is printed..	00
5 letters offering to write bee-lore for \$4.00 per column.....	00
2 letters offering to sell a bee-paper....	00
1 letter offering to sell us a barrel of monkeys, to keep the millers away from our bee-hives.....	00
3 letters offering to write in exchange for advertising.....	00
Total.....	\$ 45

GALVANIZED TANKS FOR HONEY; ARE THEY UNFIT FOR SUCH USE?

THE following is a card just received from Chas. F. Muth & Son, and will explain itself:

Friend Root:—Tell us whether, in your experience, you have found galvanized-iron tanks to be unfit for receptacles of honey. The knowledge of the fact seems to be of importance to one or more of our friends.

CHAS. F. MUTH & SON.

Cincinnati, Ohio, April 4.

For years we have advised against the use of galvanized iron for any purpose where honey would come in contact with it; but more recently our opinion has been undergoing a change as the result of some recent developments. Several years ago a Toledo firm made their extractors of galvanized iron, and they insisted that it in no way affected the honey. But very recently the large California honey-producers have particularly specified in their orders, that their extractors be made of galvanized metal—first, because it was stronger; and, second, because it

would not rust. We have observed, too, that these Californians, who produce their honey by the carload, often store it in large galvanized-iron tanks; and later in the season, when they have more time, they draw it off into square cans, to be shipped. Yes, indeed, they use these large tanks above ground, not only for holding honey, but for holding the water-supply.

Some years ago, when the writer was studying chemistry at Oberlin, the question was raised in class in regard to the various kinds of water-pipes. The professor said that iron pipes were objectionable because they were liable to rust. For this reason he preferred galvanized pipes. "But," said one member of the class, "is not galvanized iron poisonous?" He answered by saying that, where water stood in a galvanized vessel for some length of time, it might appropriate enough of the poison to distress the stomach slightly; but from the galvanized water-pipes there was no danger because the water is drawn off so frequently, as a general rule.

A year or so ago one of our horses died of a peculiar sickness, and we at the time attributed it to the fact that he drank water that had passed through 200 or 300 feet of galvanized pipe. The water was allowed to stand in the pipe for 24 hours, and then a small quantity was drawn off and sent to our State Chemist. The analysis showed that there was not enough of the poisonous element to be in the least harmful to man or beast.

In a recent bulletin from the Department of Agriculture, the relative merits of lead, iron, and galvanized metal were discussed from the chemist's standpoint; and the report at the time, if we remember correctly, was to the effect that *lead* pipes would in a short time give off enough poison to the water to render it a little harmful; and that fruit canned in lead or terne-plate cans was often poisonous, but galvanized pipes were, as a general rule, regarded safe.

Now, then, for the use of extractors we can not believe the galvanized metal can do any harm to the honey, because it does not remain long enough in the can; but when a small quantity of honey is *stored* in a galvanized tank a good while, it may appropriate enough of the zinc to be harmful.

This is an important question, however, upon which we should like more light from those who are in a position to advise—especially from bee-keepers who make use of a large quantity of galvanized iron. In fact, we should like to have sent us a sample of honey that has been kept in a galvanized tank for a year or so. We would then have it submitted to a competent chemist to determine whether there are any poisonous properties, as the result of this storage, in the honey. In conclusion, we would say it is a good idea, if in doubt, to be on the safe side until we get "more light."

MR. HEDDON AND THE GLUCOSE QUESTION,
ONCE MORE.

As intimated in our last issue, we expected to give Mr. Heddon a chance to reply to our footnote on p. 278; but his reply, just at hand, takes five columns to our two. As it is out of the question for us to allow him so much space we will endeavor to give the main points of his article as *fairly* and briefly as possible.

Mr. Heddon sends an affidavit from his son Charles, to the effect that he (Charles) personally took from the hives the Willard honey, and shipped it himself; and that, to his certain knowledge, all of said honey was free from adulteration. This is good so far as it goes; but, if we are correct, Mr. Willard asked Mr. Heddon *himself* to furnish an affidavit that said honey was pure, but Mr. Heddon ignored the request—or, at least, Mr. Willard received no response. In answer to our inquiry regarding the honey shipped by Mr. Heddon in 1893, he says he never shipped any adulterated honey to any one.

Referring to the two cans of honey we have in our possession, he admits the genuineness of the tags, and that he has been in the habit of attaching them in that way; but, assuming that the tags, cans, and box are his, he denies that the honey is adulterated; or, if adulterated, that it ever came from him. He says he sends us a sample of pure honey, and asks us to compare it with this in the cans. Of course, we expected that the sample would taste all right; and it is greatly superior to that in the cans.

As to the cheap honey, he refers to S. T. Fish & Co. as advertising honey from $4\frac{3}{4}$ to 6 cts. per lb., depending upon style of package and quality. In a letter just received from S. T. Fish & Co. they say that this $4\frac{3}{4}$ -cent honey is in barrels, and Southern stock at that, while the 6-cent honey is the finest product. Some time ago they wrote us that the honey market was very poor; and that, owing to the very hard times, they could not begin to realize anywhere near their old prices, and they were afraid they would have to make low offerings to dispose of what they had. But Mr. Heddon has been offering cheap honey for years back, and it was not Southern stock either; nor were the times hard as now.

He refers to the test made by Prof. Cook on the chemists, where 50 samples were placed before them, some adulterated and some not, with glucose, and which the chemists recognized correctly in every case, as not being conclusive to him. He affirms that the test should be made by persons who should "lay aside all desires as to results." That is just exactly what *was* done. If they had any desire to show that the honey was adulterated, why did they not show those samples that were pure, as also adulterated? But, no; they correctly picked out the pure from the "doctored" samples. There was

not and could not be the least prejudice in this instance.

Further, we call our readers to witness that Mr. Heddon said, on page 277, that nineteen-twentieths of his customers praised the honey he shipped them, and that he (Heddon) *offered* to show us the "original manuscript" to prove it if we would publish it. In the closing paragraph of our footnote, we called attention to these testimonials as being merely *printed* and *numbered*, with neither date nor name; and as Mr. Heddon had *offered* to furnish the original letters, proving all these testimonials to be genuine, we told him that we would publish them or acknowledge their genuineness. Now, did he do it? We have read his 11-page article, now in hand, over carefully, but do not see any reference to it; and as to the "original manuscript" that he was to furnish, it has not yet made its appearance. Perhaps he overlooked it.

The rest of the article is concerned largely in defense of his statements made at the Michigan State Convention; and as he has nothing new to offer we do not refer to it except to mention that he says he did not defend the practice of mixing glucose. The paper was published in the *American Bee Journal*, and it speaks for itself.

Finally, we must say that we have no more room for further discussion of this matter. We certainly do not wish to do Mr. Heddon an injustice; we are seeking the truth and the best good of the pursuit. It seems to us he has had enough space already; and unless there should be some very good reason we should prefer to devote our space to other matters.

EVOLUTION BY HUMAN INTELLIGENCE.

I BELIEVE in the above kind of evolution; and one of the most interesting wonders this world affords to me is to look on and see what human intelligence and the brains of thinking men are continually evolving. Just one illustration. Something over 25 years ago it was my privilege to ride one of the first velocipedes. There was then a sort of excitement and craze for a time, and then it seemed to settle back and be lost to the world—at least, to a certain extent. There were some, however, who held on and kept experimenting with the curious machine. Some laughed at them for their pains, and I do not know but I was among the number. Finally the pneumatic safety made quite a stir in the world about three years ago. You all know that the first Columbia safety was to me not only a wonder but a glimpse of something I had not dreamed of. But the '94 wheel was such an improvement again that I was pleasantly astonished and surprised when the boys talked about having me try the results of the experiments and work of the best mechanics and the best intelligence of the world during 1893. I was a good deal incredulous about finding any thing I should like better

than my '93 Columbia. But they sent for a Victor wheel and asked me to try it. Again I am surprised and astonished. The special point of the new wheel is its lightness. When I picked it up with one hand and carried it about easily, I could hardly think there was enough to it to enable me to do what I had done on my old wheel. But human intelligence is climbing up, and it is climbing fast too. The new wheel does every thing the old one did. It is a good many pounds lighter, and it is certainly easier running. It turns sharp corners, and enables me to dodge here and there, avoiding foot-passengers with an ease and security I did not believe possible only a few months ago. Is it really possible that, through the inventive genius of our bright mechanics, a middle-aged man like myself can dodge around, and skip and run, with the ease and rapidity and secure footing of a child? I suppose that, to be consistent, I should expect the year 1894 to witness still more progress and achieve still greater wonders. Well, I am trying to scrape up faith; but meanwhile I am quite well satisfied with my little 1894 Victor Flyer. A. I. R.

DEATH OF C. N. ABBOTT, FOUNDER OF THE
BRITISH BEE JOURNAL.

After GLEANINGS was in its third year I discovered there was a bee-journal published in England. GLEANINGS was started in Dec., 1872, while the first issue of the *British Bee Journal* came out in 1873. Mr. Abbott was born Oct. 5, 1830, and myself Dec. 9, 1839, so there was a difference of nearly ten years in our ages. Some of our older readers will remember my metal-cornered frames, which came out in 1872. The first notice I had of the *British Bee Journal* was a description of my metal corners, accompanied by some very fine wood engravings—one of the blank of which the corner was made, and another already folded up. These illustrations were so much better than the average wood-cuts in our own country that I was very much astonished; and I soon learned that whatever friend Abbott undertook had to be done in the very best manner possible. His whole journal was a model in the way of typography, engravings, and scholarship. In fact, the only objection to it (if it can be called an objection) was the editor's impatience with people who persist in half doing a thing, and especially with what some of our British cousins have been pleased to call "Yankee slipshod ways." Friend Abbott and I soon became acquainted, and an exchange of journals was proposed. He sent me a bundle of his journals, and I sent him a bundle of ours in return, and then we each remailed them to subscribers. Friend Abbott's journals came to hand wrapped with exceeding niceness and security. Our own, however, did not fare so well. The bundle burst open, and the journals were crumpled up all through the mail-bags. At this our

friend's characteristic impatience cropped out, and he gave me a short lecture on sending things carefully by mail. I remember the ending was something like this: "All this bother has resulted just from the lack of a bit of string." The demand was so great for early numbers of the *British Bee Journal* that we never succeeded in getting a complete file. Our bound volumes date back only to Jan., 1875.

It was not long before we had a visitor from "Merrie England," and I told him of friend Abbott's letter. He said friend A. was one of the best of men; but, as with many of us, people must become acquainted with him to understand him thoroughly; and he said Mr. A.'s best friends had learned to make allowances for his impatient outbursts whenever he came across any piece of shiftless work; and, oh dear me! we do not have to travel very far in America, nor England either, to find half-hearted people.

Friend Abbott was a practical man. High-sounding theory, without practical knowledge, would never pass with him, nor did it ever find a place in his journal; and sham and deceit of any sort were always obnoxious to him.

Some years ago we greatly enjoyed a visit from his son, Mr. James A. Abbott. While he inherited some of the special traits of his father, going about in the world as he had done had somehow taken off the sharp corners. I remember that, at a bee-keepers' convention in Albany, one of the bee-brethren got off his track into political and financial matters; and just as friend Abbott came in and sat down beside me, this Yankee brother undertook to tell us something about the finances of the Bank of England. Young Abbott very soon gave him to understand, and the rest of the convention, that a son of old England was in their midst, and did not mean to remain unknown either.

Peace to the memory of C. N. Abbott; and may we learn to copy his virtues, and overlook his failings, if such they really were. A. I. R.

BOOK AGENTS.

A young man called at our home early in the evening. He said he wished to see me particularly, but declined telling what he wanted. Mrs. Root told him he would find me over at the factory; but he said he wished to see me at home, and would call at half-past seven. I was tired, after the duties of a busy day, for this remarkably fine weather in March has crowded business on to us of all kinds, almost all at once, and I did not really want to see anybody that evening. I wanted to look over the agricultural papers. The family were all away somewhere; and when the young man called I was alone. As he did not seem inclined to make known his business, I offered him a chair. He said he came from London, and had not been long in our country. Then he spoke of our people and of our State. He talked about the

weather and about finances, and finally he commenced about spiritual things. I did not say very much in reply, because I did not care to prolong his visit. And, by the way, it is a very great task to me to sit and waste time in commonplace observations. Some people seem to delight in studying up something to talk about, and talk and talk without any point to their remarks, and waste precious moments in rambling all over the universe. It is all very well if people have no business on hand, and nothing else to do. But it is really surprising to me, many times, to see people waste precious moments in idle talk. I try to be courteous to everybody; in fact, I sometimes make observations about the weather in order to be sociable; and I certainly expect to be civil to people who come into my own home—that is, within the bounds of reason. I became so weary, however, of this rambling talk that I asked my guest, as pleasantly as I could, if I might inquire why he so particularly desired to see me. At this he smilingly reached into an inside pocket and drew forth a book. I had been mentally questioning whether he might not after all be only a book agent. He commenced to talk, but I interrupted him.

"Excuse me, sir; but it is true, is it, that you are a book agent?"

He dodged the question a little, but I forced him to admit that he was.

"And then why did you not inform me, when you first came in, what your business was?"

He did not reply to this, but commenced again an eloquent discourse, or at least I presume he considered it so, in regard to his book. He insisted on holding it open before me.

"Please excuse me, sir, but I do not wish to buy a book of any kind. I very much prefer to examine the books and papers I have here on my desk, that I have as yet hardly had time to look at."

However, he was not to be bluffed off in that way. And I began to think that, may be, I was not master, after all, even in my own home, and I finally rose up and said:

"Please excuse me, sir; but I have been greatly annoyed by the importunities of book agents, and sometimes I am accused of being very harsh to them. If you will put your book back into your pocket, and believe me when I tell you that I do not want it, and prefer not to take the time to even *look* at it, we can, perhaps, finish our business pleasantly."

I do not know whether it was cheek or whether it was ignorance that prompted the young man still to insist that I should look at his book and listen to his tirade; but I decided that forbearance had ceased to be a virtue. I opened the door and motioned with my hand for him to go out, and wished him a good-evening as pleasantly as I could under the circumstances. I think it was about at this point that he commenced again:

"My dear sir, if you will just let me put the name of A. I. Root at the head of my list, you don't know how many books I can sell, simply because of your high standing and reputation."

This came pretty near being the "last straw." I remember of thinking that, perhaps, I should really be obliged to put him outdoors by main strength, and I remember of thinking how much I should relish such an undertaking. He finally went out, and I closed the door after him just about as soon as it could be safely shut. Then I went and sat down, thinking I had finally got through with him. A timid knock at the door, however, admonished me that he was not gone, after all. At the same time I began to feel a little sorry to think that I had been so severe. I did not mean to let him get in again, however, but I opened it enough so he could speak.

"Mr. Root, I really beg your pardon for having vexed you. Will you not forgive me?"

I replied, "Yes, my friend, I will most cheerfully forgive you on one condition."

"And what is that?"

"That you will, from this time forward, tell the good people wherever you may call, *at the very outset*, that you are a book agent."

He did not give me the promise, and here rests the whole point of my story. Everybody else that I know of—that is, people in every other occupation—when they call upon a business man (or business woman, for that matter) are not ashamed to tell what their business is. I have known patient, hard-working Christian women, who have again and again been obliged to stop their work in the middle of a busy day—yes, their ironing and their baking, perhaps with a baby crying, to listen to the disagreeable lingo of some book agent. And I have heard people excuse themselves for buying a book they did not *want*, because they said they could not see any way in the world to get *rid* of the fellow without buying his book. I do not particularly object to book agents, if they would come out fair and square, and tell their business. They have learned of late, it would seem, that carrying a book in their hands, or even in a valise, "gives them away," to use a slang phrase, and so they have arranged to have a capacious pocket made on purpose that they may get into your home or office in such a way that you really can not decide it is not an old acquaintance or some distant relative that has just turned up. Shame on any occupation that requires one to sail under false colors. Let us have oleomargarine, and things of that sort, *labeled* with their real name. Let us have glucose labeled as glucose; and let us have a law passed (if nothing else will do) requiring book agents to put up a sign or wear some sort of badge, making it known in good-sized letters to the world around, something like this:

"*I am a book agent.*"



Whosoever therefore shall break one of these least commandments, and shall teach men so, he shall be called the least in the kingdom of heaven; but whosoever shall do and teach the same shall be called great in the kingdom of heaven.—MATT. 5: 19.

Some time toward the last of February I was telling my friends, perhaps a little boastfully, that I had not had a cold this winter. I further added that I had not worn any chest-protector at all, such as I have been obliged to use winters for many years; neither had I slept with a "nightcap" on, as I have been obliged to do in *winter* for years back, and oftentimes even in the *summer*. Somebody remarked that I had better be careful about boasting, for I might have to go back to all these things before spring would be fully opened. And so it happened. I caught cold and had a sore throat. When I got over that it settled on my lungs; then it got up between my shoulders; and if I got the least bit chilly I would have pleurisy. I suppose you all know something about these things, and so I need not go into details. And, by the way, please do not recommend any medicines for this sort of thing. Could I have gotten out into the open air and ridden my wheel forty or fifty miles it would have answered the purpose, to my notion, far better than any sort of medicine. You see I am still strong in my notions of "doctoring without medicine." Well, this morning, when I first arose I remarked that my boots needed to have their soles repaired again. They keep wearing out toward the toes—especially the right boot—and my shoemaker has built over the right toe of this boot so much that of late he has been putting in great nails in order to get something that would not be worn clear up to the uppers every six or eight weeks. As I said, I recollected my every-day boots would have to be mended, and I should have to put on my Sunday ones; then I considered further that a corn on my right foot needed paring; but as it was Saturday morning I thought I would make it do until I took my accustomed bath Saturday night. Sure enough, the new boot did press unpleasantly on that sore corn. However, I went over to the factory, whisked up the elevator, and placed a letter where it would not be neglected; then down again to the basement, through the greenhouse, and into the potato-cellar, which I discovered was 47 degrees; and although it was freezing a little outside, the man in charge had not left the windows open during the night. I got them all wide open, and reduced the temperature 10 degrees in a very little time. Then I looked after various other things, and gave directions in regard to the work; but as I started for breakfast I could not help limping, for that new boot was making my corn feel very sore. The soreness was streaking up my leg, and the pleurisy from my shoulder was streaking down to meet the other. It made me think of the northern lights with their streamers, on the night before—Friday, March 30. By the way, what a magnificent celestial display of "search-lights" we did have as they met together in the zenith! I did not see the colors, but Mrs. Root and the children described them to me, for I am color-blind to a certain extent. Well, the "streamers" from the pleurisy from my shoulder, and the corn near my small toe, were not nearly as inspiring as the aurora. In fact, before I got home I was conscious of

being not only crippled in body, but I felt crippled mentally, and, I am afraid, a little bit spiritually also. Dear me! what a wonderful truth that "kid" did utter when he said, in speaking his piece,

"Tall aches from little toe corns grow"!

I opened the bedroom door to go through to the clothes press, to get a sharp knife that I knew was in a pocket of my Sunday clothes. It is one of the queen-cell knives, and it is very sharp. First, the door stuck and would not open, and that vexed me. Then Mrs. Root had hoisted every window as far as it would go, and the wind was just rollicking through the bedroom, and the bed-clothes were piled over the chairs and the bedstead. They were getting ventilated and purified to an extent that ought to have satisfied any thrifty housewife. But I had got my overcoat off, and the ventilation did not help my pleurisy a bit. I remember of thinking that she carried this matter of ventilation of bedrooms to a very unwarrantable extreme. Fifteen minutes with such a wind, it seemed to me, ought to do the business; but she likes to keep it up pretty much all the forenoon. I thought of making some gentle remonstrance; but then I remembered my sermon in the last issue, on domineering; and I drew a long sigh to think that even the pleasure of scolding could not be indulged in, as I had so thoroughly put up the bars behind me in that talk. Yes, the bars were good high ones, and there must have been pretty nearly a ten-rail fence around the rest of the lot. The corn and pleurisy together seemed to utter a groan to think what a straight and narrow path it is—yes, not only straight and narrow, but there is a ten-rail fence (you know) on each side of this path—that a consistent Christian must walk in. Now, hold on, friends. Let none of you think I am complaining of the restrictions to one's liberty that Christianity imposes. I hope I am sensible enough to rejoice and not chafe—yes, to rejoice in the liberty that Christ Jesus gives to his followers. Well, that door stuck again. I remembered of promising my wife, more than a month before, that I would stop its sticking just as soon as I got up in the morning, and it had not been done. I knew perfectly well what made it stick. There is a pair of doors between the sitting-room and our bedroom. They are heavy walnut. One of them is bolted to the ceiling overhead and to the floor below. On account of the shrinking of the door, the bottom bolt did not enter the iron plate in the floor. Notwithstanding the pleurisy and corn, and the neuralgic streamers, I decided that that door should be fixed *then and there*.

One of my daughters, at this crisis, informed me that the omelet was just ready for breakfast, and would fall and be spoiled unless I would come to breakfast at once. She has lately taken to *cooking* as one of the fine arts, instead of playing the violin. There were several reasons why I wanted to accommodate her. I felt vexed at that door; but I felt more vexed at that importunate corn. Well, I got through it all. Huber brought me Mrs. Root's nice little hammer, and about three blows settled the iron plate so the bolt would go into its place. Then the door opened and shut easily and smoothly. With the sharp knife I pared the corn down until the white kernel was cut out entirely. Then my Sunday boot was comfortable and pleasant. The omelet was not spoiled by *considerable*; and when it came time for our usual Bible-reading and prayer, I was in a very thankful frame of mind.

Well, what has all this got to do with our text and my sermon? Please do not be in a hurry, and we shall get at the point. I have

not yet got quite through with this matter of corns, however, and may be we shall find a sermon right there. Some of you may say that paring corns with a nice sharp knife is a very poor way of fixing matters. Well, I should be glad of instruction. I have tried corn doctors; but I should need one about once a month; and with a good knife I can work faster than they do, and *cheaper*. How about corn remedies? Well, I have not tried all of them; but Mrs. Root has tried all, or pretty *nearly* all. I was going to say. There is one remedy that suits my notions better than either a knife or medicine. It is right in a line of doctoring without medicine—going barefoot. This, I know by experience, is a perfect and complete remedy; and wading in the creek—in warm weather, of course—15 minutes a day, I believe, would answer; or go out some warm night when there is a heavy dew, and promenade up and down the lawn. This plan answers nicely. You need not tell me my boots were too tight or bad-fitting. They were made to order, and I have tried every variation, almost, to get them so as to make the least trouble. A boot that is too loose is not an easy one. When it is real warm I wear cloth shoes. These are next thing to going barefoot. I should be glad of help in this matter, but I do not believe I want any more corn medicines.

Now, then, even from a *Christian* standpoint of view you can not afford to be tormented by corns. You can not afford to have your strength, energy, vitality, and endurance, sapped out of your whole system by one little insignificant corn. One of the ladies' journals has had something to say in reference to this matter. A woman may wear herself out more in half a day than she would ordinarily in months, by being dragged down by a troublesome corn. Most of you have had experience more or less in this line. Again: If there is another weak point in the system, the pain and irritation from the corn will run over to that weak point and aggravate it all along the way. So much for the physical corns. How is it with the spiritual? Very likely one can, if he takes great care and pains, avoid having corns—or, at least, he can avoid being very much troubled with them; and in the same way he can and should beware of letting spiritual corns grow, increase, and drag him down. Suppose there is some cider in your cellar, that was purchased to make into vinegar. Some time you happen to be down there alone, and you are tempted to take a drink. You are a professor of religion, and a temperance man too. You know it is *wrong*. You would not have *your boy* do the same thing for the world. Away back years ago, when you were a child, a good many good people used to drink cider. But ours is a progressive age. Intelligent Christians are expected now to shun temptation. Perhaps you are alone in the house. May be it is after dark. There is not a soul anywhere near. You feel an especial hankering for the cider, and Satan says, "No one will know it, anyhow. Besides, it is your own business and not theirs." Very likely he adds that, in the present state of your health, it will do you good and not harm. You yield to the temptation. My friend, in such a case you are afflicted with a spiritual corn. You won't be just the same as you were before until you have *honestly repented* and asked God to forgive you. If you do not do this, this spiritual corn will act like the others I have been telling you about. If you have a hankering after other things that you know are wrong, these other temptations will rush up and put in their plea. They will say, "You yielded to the appetite for cider; now be fair and consistent all round, and let *us* have *our* chance too."

The one appetite is like the corn I told you about—it will streak over to the other, and they two will mutually help each other. If you have been keeping your temper pretty well under control, and a sudden temptation comes over you, the memory of that cider experience will streak over to the temper, and you will be ever so much more likely to give way. You know intemperate men get mad on the slightest provocation, and act without scruple or sense. If you have been battling with some low appetite or passion that need not be mentioned here, they all start up with unwonted energy; and if the three get united in trying to storm the citadel—the citadel held and ruled by reason and a Christian spirit—you will find resistance will be like one man fighting against three strong men who have pounced upon him all at once. "When a strong man armed keepeth his palace his goods are in peace: but when a stronger than he shall come upon him, and overcome him, he taketh from him all his armor wherein he trusted, and divideth his spoils."

Giving way to one little temptation started the whole of it. When a man feels himself sinking it begins to be exceedingly hard for him to attend worship as usual, and to go through the forms of daily worship. The Bible begins to seem to him arbitrary and unreasonable. He begins to hate God's people and God's word, just for the reason that "men love darkness rather than light, because their deeds are evil." And the next verse makes it plainer still: "But he that doeth truth cometh to the light, that his deeds may be manifest that they are wrought in God." You see, this latter individual loves God's holy word, and rejoices to meditate in it day and night. He did not let any spiritual "corn" destroy his peace of mind and his communion with his Maker. The wages of sin is death; and in the same line the consequences of just a little sin is *deadening* to one's spiritual nature. One little corn, if allowed to grow, saps one's very strength and vitality. So one little spiritual corn, if allowed to go unrepented of, saps and kills spiritual vitality. Bad men curse the name of God, and curse and jeer and ridicule his holy word. Why does a drunken man swear? and why does he hate Christians? That old veteran Paul knew all about it. He said, "Put on the whole armor of God, that ye may be able to stand against the wiles of the devil." Do not let any little sins kill out your spiritual enjoyment. Do not leave even the smallest break in the armor. "Wherefore take unto you the whole armor of God, that ye may be able to stand in the evil day."

GETTING UP STAIRS AND DOWN.

SOMETHING IN THE WAY OF PASSENGER ELEVATORS.

A few days ago, when I was rushing through the wax-room, the foreman began to smile. I stopped, and asked him what was wrong. "Oh! nothing," said he; "but I have been thinking it is not any wonder that you are wearing out, if you have to climb stairs, and rush from one room to another at the rate you have been doing this morning. If they could give you a *bicycle* that would enable you to run up and down stairs, it would be a big thing."

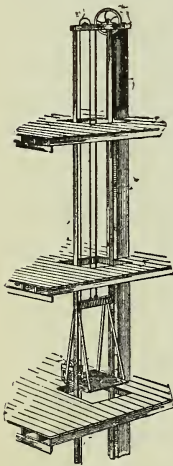
Well, we *have* a power elevator to carry heavy freight up and down—yes, three of them; and sometimes when I am tired I do avail myself of the elevators. But they are too slow, and a good deal of the time they are not on the floor where I want them. Besides, they are

complicated. A few days ago a circular came floating through the mails, something to this effect:

"Friends, are you in any way interested in the matter of light passenger elevators? If so, will you please let us know?"

I think there was a picture on the circular; and, just for the fun of it, I wrote them, "Yes, I am interested. Tell us something more about your light passenger elevator."

A few days afterward they said there was a man waiting to see Mr. Root, and he said he must see me, and nobody else would answer. I found him; and when he told me he had come clear to Medina on purpose to tell me more about elevators, I was really sorry they had taken so much pains and trouble, for we certainly could not buy one then; but I said we should like to know something more about it out of curiosity. He assured me that it was all right, and that he was quite willing to pay his expenses to Medina and back again just to get a glimpse of A. I. Root and his establishment. He added he had *got* his pay already. When I began to ask him something about the elevator, I found that he was the inventor of the machine, and one of the most enthusiastic inventors I ever saw; and when he told what his elevators would do, and said he would put in one and take it all out without any expense to us, I began to laugh at his earnestness. By the way, for several months past I have been discovering day by day that I should have to be relieved from so much going up and down stairs, or I should "play out," as the expression is; and this invention seems to be a special providence. Here is a cut of it.



SELF-LIFTING
ELEVATOR.

inventor one rises and falls about as easily as the fish does; but he does it more quickly than the fish does. The inventor tried to explain it to us, but none of our expert mechanics could understand how it was possible, until we saw the thing actually at work. Let me try my hand at a description.

Perhaps when you were a boy you discovered you could throw a rope over the limb of a tree, and get up into the tree by simply pulling one end of the rope while your foot was placed in a noose in the other end. Keep this in mind. You have also seen very deep wells where a chain passed over a roller, having a bucket on one end of the chain, and a stone, or some other

object for a counterpoise, at the other end. When the bucket of water and the weight were just balanced, almost no power at all was required to bring up the water. Now, with this elevator there is a big iron weight, weighing as much as the carriage and a man inside of it. The weight is 38 inches long and 6 inches in diameter, so it occupies but little space outwardly. Suppose the man and cage just balance the weight, as I have said. You will readily see that a very little power would move the cage and man together up or down. This power is applied by the passenger taking hold of the rope running over the smaller of the two pulleys seen at the top. This rope, in fact, goes right down through the cage. Very well. The man could spin up or down either by simply pulling on the rope. When he comes to the getting-off place, the instant he steps from the cage this iron weight would go down with a rush, and the cage would go up with a crash. What must be done to prevent such a catastrophe? Most of you know how the Westinghouse air-brakes, used on railway trains, are managed. The normal condition of the brake is such that a powerful steel spring operates on the car-wheels, holding them so rigid that the cars can not be moved until the engine raises them by pumping air into the proper machinery; therefore, when an accident happens to the engine, or to any part of the train, the brakes operate automatically. A similar brake is used in this carriage. It is released by the passenger setting his foot on the lever. He can not move at all until he stands on said projection on the floor of the cage; and the minute he lifts his foot to step out of the cage, it is locked so firmly that even jumping on it will not move it the fraction of an inch.

Just one thing more. Men and women do not all weigh alike; but our Quaker friend who invented the machine makes them weigh alike by a very simple device. Right near at hand in the cage is a box of rolling weights. They look like small grindstones, only they are made of cast iron. Some are thick and some are thin. This makes them weigh differently. Now, when you grasp hold of the rope, and step on to the cage, you roll one or more of these weights out of the box into a similar box in the cage. Put your foot on the brake while you hold on to the rope, and you soon decide what weights will just about make a balance. After having run up and down a little to see that the weight is adjusted, it is as easy to go one way as the other. You are now ready to travel. Just hold your breath now, and I will stop here to see how long it takes me to go from the office, where I am now writing, down into the seed-room, 30 feet below, and back.

Here we are! gone just 14 seconds. Our Quaker friend says that one of the men, after the machine had been up several weeks, so that he had had some practice, went up 60 feet and down again in 14 seconds; and I presume Huber or some of the rest of the boys will very soon "break the record" I have just made above.

Now, if I should stop right here you might say this machine is a most wonderful invention. I told friend Williams I should consider his discovery worth *half a million of dollars* if it were not for one little defect. Unfortunately it rather looks as if man's ingenuity and skill could hardly remedy this defect, trifling as it may seem. If one man or one woman were to use the machine alone, this defect would never appear. It is this: Suppose you run up to one of the upper floors, and you leave the cage where you step off. There it must stand until either you or somebody else wants to go down again. Why not pull it down with a rope?

you may ask. Well, in that case you would have to pull as much as an average man weighs. In fact, if you were a little under weight you might hang your whole weight on the rope, and it would not come down then, because you are not heavy enough to make it come down. Another thing, that ingenious brake, with its terrible clutch, holds the cage like a grip of death until somebody steps on it with suitable weight. Somebody weighing 100 pounds or more must step on this brake and bring the cage down. Two *can* go up together, it is true, but they will both have to pull on the rope. If the second man weighs 150 pounds, *each* one of the two must pull $37\frac{1}{2}$ pounds to make up for his weight. Please notice, that as you pull down on the rope you also lift a part of your weight from the platform on which you stand. Changing the balance-weights makes *some* difference; but there has got to be some work done to carry up more than one person. Two children weighing 75 pounds apiece will go up just as easily as one man weighing 150. But if one of the children wants to go down alone, he has got to pull up on the rope *half* his own weight. We have had the machine at work for only two days now, at this writing. A good deal of the time, when somebody goes up, somebody else wants to go down, and so the apparatus is kept pretty busy. When anybody wants to go upstairs he glances toward the elevator. If the cage is on his floor, well and good. If not, he must go down by the stairs. The principle is this: As the elevator requires but little power, just as many pounds of people are expected to go down during the day as go up. Of course, this may vary a little by what one may pull on the rope or hold back on the rope. Our pastor was just in; and as he weighs 165, he was obliged to hold back 15 pounds in going down, and pull up the same weight in coming up. The adjusting-weight, you see, would not help anybody weighing above 150. The inventor seems to have decided that 150 is about the average weight of humanity, counting women and children who may be likely to want to use the apparatus. This morning, some stones weighing about 300 pounds each were needed from the basement. Two men managed it very easily. A stone was placed on the cage so as to rest on the brake. Then a man in the basement pulled down 150 pounds on the rope, and one on the floor above pulled down also the same weight, and the stone was lifted up without much trouble. Of course, somebody had to hold on to the rope until the stone was lifted from the brake.

In investigating this subject a queer fact seems to come out. In one sense it is not queer at all, and in another it is. It is this: After you get up in the morning you commence going up and down, and keep going up and down more or less all day long. If you weigh 150 pounds, that much weight is elevated by strength of muscle, and let down a great many times during the day; but if you sleep in the same bed at night, the sums total of going up are exactly equal to the sums total of going down. You land at the same spot. Now, if one could be made to balance the other, a great deal of hard work would be saved; and friend Williams, by his invention, does make one balance the other—at least, when you go up and down stairs.* For instance, it takes quite

a little power to lift 150 pounds up two or three flights of stairs; and the way we work it, it usually takes almost as much exertion, and sometimes I think it more fatiguing exertion, to go downstairs than to climb up. Our juvenile friends sometimes cut off a part of going downstairs by sliding down the banisters. Well, now, this invention not only cuts off the labor of walking upstairs, but it stores up the force you expend, and saves it until the same force you exerted in going down will at some future time during the day lift you up. When I go down 30 feet with this new elevator, I raise that big weight up just as many feet as I come down, and there it remains suspended just under the roof until I want to go up again. Then it does all the lifting, and does not cost any thing. You have heard people tell about making one hand wash the other. Well, this new elevator does that very thing. I told you my new invention of the exhaust steam had resulted in a storage battery for heat. Well, friend Williams has now a storage battery for *muscular force*. Why, yes; you can sit in an easy-chair, if you choose, and in going down from the attic to the basement you develop quite a quantity of muscular force that remains stored up in that big iron weight until you wish to use it in going up. We store up electricity in storage batteries—yes, enough of it so that they run street-cars by the force stored up; and we are storing up the heat contained in the exhaust steam, and saving this to warm our houses nights and Sundays when there is not any steam escaping. Finally, we are storing up the force developed while we go downstairs; and, mind you, the going downstairs can be done in an easy-chair besides; and then this force lifts us up at some other time. Perhaps it will not always be done with big iron weights. I have thought of having a big tank, say upon the roof. Every time anybody goes down the elevator it lifts a lot of water which is poured into the tank. If the goings up do not happen to exactly balance the comings down, then we will have a pump to reinforce the water needed in the tank; and we need a little more too, you know, to overcome friction; yet with the ball bearings that we have on our wheels, and all these other things to reduce friction, it will not take very much. And, by the way, if the force developed in riding down hill on a wheel could be properly stored up it would go a great way toward carrying you to the top of the next hill; and we do this already to a certain extent by riding down hill at such speed that we acquire almost enough momentum to carry us to the top of the next hill. Now, who comes *next* in this business of storing up natural forces—the waste forces, if you choose, that are being set loose all around us?

The above apparatus costs from \$100 to \$200, according to the distance up and down it has to travel; and after one has climbed stairs until he is pretty well used up by the operation, he is prepared to appreciate the invention. It is manufactured by the Self-lifting Elevator Co., Delphos, O.

therefore just balances the amount of rope on the other. Such an arrangement could be put up on the Washington Monument, at Niagara Falls, or even at the Yosemite, Cal., or in the Grand Canyon of the Colorado; and it would be as much fun for a visitor to fly from top to bottom, and *vice versa*, as to ride a wheel. Why, if I could have a steam-engine to pull me up just as well as not, I should greatly prefer to grasp that rope and spin myself up. There is no limit to your speed, except the rapidity with which you can put one hand above another on the rope. Why has not some enterprising Yankee thought of it before, and rigged up such a thing, charging admittance for the privilege of flying up and down as fast as you please?

* Just think of it! You could go a mile high, and down again, with almost no effort at all on your part, if you had a pulley up at the top and a rope thrown over it. Some of you may be sharp enough to suggest that the rope would weigh something. But friend Williams has managed that part of it. No matter whether the cage is at the top or bottom, the amount of rope on one side is just equal, and



SOWING GARDEN SEEDS IN THE FALL.

We clip the following from the *Mayflower*:

How many sow their tomato, beet, onion, parsnip, and carrot seed in the fall, just before the ground is frozen? It is true, that plants from seeds thus sown are much superior, especially in earliness, to spring-sown seed.

As there is no name appended to the above, we suppose it is editorial, from Floral Park, N. Y. We know tomato seeds will stand over winter, for they come up all over the garden, when the winter is warm enough; but in our locality, by the time tomatoes come up in the open ground they are usually too late for most people. As we have never seen beets, onions, or carrots come up from self-sowing, we feel a little doubtful about it. Perhaps, however, it is because very few people allow beets, onions, and carrots to go to seed. We frequently raise our own parsnip seed, and parsnips sometimes come up quite thickly, so we think it quite likely the planting could be done in the fall. The most of our ground, however, especially our heavy clay ground, during the winter gets packed down so heavily by the sun and rain that we greatly prefer to have it mellowed up and harrowed fine in the spring, before the seeds are put in. With light sandy soil, however, the plan would, very likely, work all right. Can anybody tell us about it who has tried sowing beet, onion, and carrot seed in the fall?

By the way, I am greatly vexed many times with our agricultural journals because they do not give the date and residence of writers. In many of the communications a man will say, "It is not too late to get a crop, if the seed is put in right away now." But with no date to the letter, how is anybody going to know what *now* means? The editor may have held the communication a month or two before putting it in. Again, somebody may give full particulars, and tell how he succeeded in getting a great crop, and yet omit to tell *where he lives*, and give no clue to the reader to guess. What does his communication amount to in such a case?

One thing more about sowing tomatoes in the fall. Livingston and Day, two great authorities on tomato culture, say that tomato-plants that come up in the garden can never be relied on at all. I think they both state that such seeds are likely to produce a different tomato from any thing you ever had on your grounds; but neither of them could give a reason why. I remember one season of finding a vine that came up unexpectedly, and got so large in a short space of time that I had not the heart to pull it up. It gave us an enormous crop of most beautiful *cherry* tomatoes; yet I can not remember that I ever purchased any cherry-tomato seed in my life. The seed may have been mixed in with some other kinds by accident; but our seeds are so very clean that we get nowadays of the regular seedsmen that it hardly seems possible. Is it not more likely that it came from stable manure that we buy all over town?

TOMATOES FROM THE SEED IN 26 DAYS.

Speaking about getting tomatoes in a very short space of time reminds me that friend Mills advertises seed from a strain of tomatoes that has produced ripe fruit in only 26 days from the time the seed was sown. My first impression was that he would injure his repu-

tation among good men by publishing such statements. Since then I remember seeing with what wonderful rapidity a tomato-plant will grow when every thing seems to be favorable. When we were building our machine-shop there was some exceedingly rich ground where I had been having plant-beds. It was mostly old stable manure, so finely rotted that it was just beautiful soft black compost. It had to be moved at once. For safe keeping I put it down near an evergreen-tree. Tomatoes sprang up almost as if by magic; and, under the influence of the warm July weather, and plenty of warm rains, they grew almost like Jack's famous beanstalk. I felt sorry for the poor things, thinking they could be of no possible use; but they did not seem to feel sorry for themselves a particle. I supposed that, of course, it was too late to think of getting tomatoes from the plants. But the plants were of full size in almost no time at all; and then recognizing (or at least it seems they did) that they would have to "hustle" if they would escape frost they sent out blossoms, and had ripe tomatoes before one would think it possible. There was not any thing on our grounds where we were raising tomatoes that could compare with those by that evergreen-tree. It reminded me of a sitting hen when she steals her nest out in the weeds, and hatches out more chickens, and finer ones, than the highest-priced incubator ever thought of doing. Is it not funny that old Dame Nature sometimes, when she gets into a rollicking mood, just beats all the old veterans, and does not seem to make any fuss about it either. Well, I planted the seeds of those wonderful tomatoes—"the earliest tomato in the world," etc. They were planted March 27th, in the very best place in our best greenhouse; and at present writing, just 8 days after, several of the seeds are pushing through the ground. Only 18 days are left out of the 26. The seeds are precious, so we stuck a toothpick down about each one so as to be sure we did not get swindled by some volunteer tomato. By the way, did anybody ever see tomatoes come up in the greenhouse as quickly as they sometimes come up outdoors when every thing is just right? We saved half of the packet, and we are going to wait till the very best time in June, and see what we can do with the remaining seeds in getting tomatoes in a short time. If I make it in *twice* 26 days I confess I shall be pretty well pleased.

THE BLIZZARD THE LAST OF MARCH.

Like most of the rest of you we got caught; but I really do not see how we could have helped it very much, unless we went to the expense of more sashes; and in some cases the plants we lost were worth almost enough to pay for sashes to cover them. The trouble was, we had April weather, or almost May weather, during the greater part of March, and the plants would grow in spite of us. I do not know how we could have well kept them back. The tomato-plants crowded the greenhouse so that they *had* to be put outside. In fact, some of them got long-legged as it was. Well, when they had to go outside, the sashes had to be taken off the cabbage to cover the tomatoes; and our cold-frame cabbage-plants just took hold and grew without any sashes at all. I confess it seems a shame to handle sashes all winter long, and get a splendid lot of cold-frame cabbage-plants clear through the winter up to the last week in March, and then let them freeze for want of sashes. Of course, some of them will fetch up again—may be many of them will; and perhaps they will be as good a sever; but it will throw them back so late that they are no better than spring-raised plants, unless, indeed, the great bushy roots should give them

an advantage. It is the same with the onion-plants, and quite a few other things. We utilized every thing in the shape of sash and shutters, and then used cotton cloth and blankets; but I thought that surely those hardy cold-frame cabbage-plants would stand any weather we should get so near April 1. Here is where another warning comes in. I think that, during every previous spring, we have found the beds heated by exhaust steam would stand the hardest freeze without injury. But *this* spring they really suffered worse. I presume the reason was, the bottom heat, together with the fine weather, had induced a rank tender growth; and I think the bottom heat would have warded off any ordinary frost. But only 15 degrees above zero every night for almost a week was more than they could stand. We had peas up in the open air, two inches high. It did not kill them, but it scorched some of the top leaves. I think it was the first time I ever saw peas that had come up in the open air in the spring, hurt by a frost or freeze. The lilacs near our house were showing the blossom-buds. The freeze killed the new growth, and I do not know but it pretty nearly killed the bushes. Some peach-trees were beginning to show the pink of the blossoms buds; but, to my surprise, these at present seem to be unharmed. I presume that, a little further south, where fruit and other things were still further advanced, the damage is greater than in our locality; at least, the following letter seems to point that way:

Every thing gone up with the Easter freeze. Alaska peas, 4 inches high; potato-onions, 10-inch; seed onions; lettuce, radishes, etc., well up, all destroyed, except the large onions, which are starting again. Frost and ice last night.

Rugby, Tenn., April 3. MRS. M. S. PERCIVAL.

Let us not be in haste, however, to borrow trouble. After almost all such cases of severe weather in spring we do not find things after all as bad as many imagined they were. It is not such a great calamity, after all, to have our fruit thinned off a little so as to prevent a glut in the market. The only trouble is, this thinning does not come on all alike. Some have nothing left, and others are uninjured. I believe, however, this is true, generally speaking: The wide-awake, energetic gardener or fruit-grower gets ahead of the frost by some hook or crook when other people do not. During all this spring we have been getting 20 cts. per lb. for spinach and beet greens. I put the price up so people would not insist on having them when they were only half grown. But they would have them nevertheless. We sold lettuce all winter for 20 cts. per lb., but now we can not supply the demand at 30 cts. Green onions do not seem to sell as they usually have.

ABOUT HAVING MORE SASHES TO MEET CONTINGENCIES.

I think there is an extreme both ways. It does not pay to have a great lot of sashes that are not earning you any thing; and it does not pay, either, to have stuff killed for want of sashes. But with us, somehow or other it seems impossible to manage so that each one of our 150 sashes may be earning as much money as it ought to. I presume some of our sashes earn two or three dollars in a season; but there are a good many more that do not earn a quarter as much. It wants a better manager, or a manager who has not so many other things to look after. And, by the way, what a chance there is for keen headwork and intelligence in this matter of handling sash! It is, however, work that I really love, and I can hardly imagine any thing nicer than watching the clouds, the winds, the rain, the snow, and the

frost, keeping all the while in touch with the Weather Bureau, and managing so as to avoid moving sash uselessly, and yet giving your stuff all the air it needs, and at the same time avoiding losses. Like almost every thing else, however, this must be learned by degrees. Commence with half a dozen sash; or, if you are a boy in your teens; get two sashes. Plan and figure to make the most of the half-dozen; then go on up to two dozen, then 30, then 100, and work just as wisely with the large number as you did with the smaller.

SPRAYING TO KILL THE INSECT-ENEMIES OF OUR FRUITS AND PLANTS.

The Ohio Experiment Station comes out with newspaper Bulletin No. 136, with such high recommends for the above, that one might almost think they had spraying-pumps or medicines, or something of that sort, to sell. For instance, in their heading they say:

"Spraying profitable; several hundred per cent sometimes realized."

Somehow it gives me a feeling of pleasure and satisfaction every time I see one of these experiment-station reports, because we know they come from disinterested parties, and from our best and most careful students and thinkers, who have no object before them except an unselfish desire to benefit the farmers and horticulturists of our land. May God speed them and give them wisdom! In this bulletin they have simplified and cut down the directions so that it gives the latest knowledge in regard to the subject, in the very fewest words; and I would advise our readers who want light on this matter, and who have not seen this bulletin in print, to send for it. Address Experiment Station, Wooster, O., and ask for "newspaper Bulletin No. 136."

RASPBERRIES AND STRAWBERRIES—SOMETHING VALUABLE IN REGARD TO THE CULTIVATION OF RASPBERRIES.

I have "Root and Terry's A B C of Strawberry Culture." Perhaps some can raise larger crops of strawberries than I; but it is said ours are the finest berries in the Cooperstown market. They averaged us 14c per qt. Our best did not sell for less than 15, when others were selling for 8 and 10. I should like to tell you about our raspberries. We have 141 rods, from which we picked 100 bushels of large fine berries last summer. It was said by people who visited our raspberry-field to be the finest fruit they ever saw. I could sell when others had to take their berries home. I grow them in thin matted rows, 6 feet apart, with good strong posts driven on each side the row, about 40 feet apart, leaving the row one foot wide, then run a No. 12 or 14 annealed wire around the row, about 3 feet from the ground, drawn as tight as I can draw it, and then fastened to each post with a good staple. I hoed and cultivated them thoroughly until they were in full bearing. I manure heavily every fall with any kind of stable manure. The canes grow strong; and, by leaving in the old canes till spring to support the new ones, the ground is so shaded that once cultivating is all that is needed. In the spring we cultivate once, break out the old canes, pick the berries, manure in the fall; no hoeing is now needed. Part of our field has not been loed in five years, and is free from weeds.

In footnotes on page 753, Oct., 1893, you say the only drawback is the expense of straw sufficient to keep down the weeds, and keep the soil damp. You need not pay out one cent, nor use any straw for mulching to kill the weeds or keep the soil damp. Our raspberry-canecan are set on the driest ground we have, and we

see no difference about seeds in the manure. The bushes kill out all weeds, and keep the soil moist. We expect to pick 125 bushels the coming summer. E. U. PARSHALL.
Cooperstown, N. Y., Mar. 8.

[Friend P., your suggestions are indeed valuable; but I am afraid the rest of us will not all succeed as well as you do; and, by the way, you have not told us what the variety is that you work thus in matted rows. The weeds in the manure that we get at our livery-stables, especially the docks, dandelions, and thistles, would choke out any variety of raspberries we have ever cultivated. In fact, I have been trying the same thing. When Terry recommended the straw mulching it occurred to me I could get coarse stable manure almost as cheap as the straw, and I thought it ought to be worth ever so much more. I like this coarse stable manure for mulching, tiptop, if it were not for this one thing—the weeds. Our Turner raspberries have made such thick matted rows that the weeds grow very little; but the raspberries also amount to very little on account of the tremendous amount of plants. When you tell us what variety it was, will you please say also how much ground is occupied by the 141 rods?]

NASTURTIUMS.

Nasturtiums are sometimes used in salads, and to garnish meats, not omitting the flowers when in bloom; and the seed, at least, is often used in pickles. Botanists apply the name "nasturtium" to water-cresses and allied plants.

RUTH MOORE.

Tiffin, O.

[Landreth catalogs it as "Indian cress, or Nasturtium."]

THE EXCELSIOR BEE PALACE. AND PATENT HIVES IN GENERAL.

It has been so long since any thing of this kind has come up, we had begun to hope that it was ended. But a circular just comes to hand from Washington, D. C., from which we make the following extract:

Then get as many swarms of bees as you are able to get (the more the better), and get them now this very spring, and commence bee-raising at once, and I promise you that this very year you will lay the foundation of an independent fortune, and at the same time you will find it the most pleasant and profitable occupation of your life. Do not neglect it—do not lose this year's opportunity, and you will see "that hard times will come again no more."

Of course, the average bee-keeper of our land would only smile at such a circular; but it is the unlearned, and those unacquainted with the bee-journals, who may be entrapped. The circular is the more dangerous because it quotes A. I. Root as a man who has "built up a mammoth business, and accumulated a colossal fortune" in bee culture. It also quotes Jennie Atchley as the owner of an apiary of 1000 hives, having made all her money by raising queens. Perhaps Dr. Simpson means to be truthful in this circular; but it is really a string of falsehoods and misstatements. I am inclined to think that much of it is the result of a want of knowledge in regard to bee culture. The last sentence in the circular rather gives us a clew to some of his extravagant enthusiasm; viz., "Farm, township, county, and State rights on reasonable terms." I hardly need add, that no patent hive or bee palace of any sort is needed to secure the very largest possible results in bee culture.

A. I. R.



CRANE SMOKERS.

We call the attention of our readers, in want of a good smoker, to the advertisement of the Crane, on another page. As now made they are simply perfect, and they are sent each one in a pasteboard box, which, for the dealer, keeps them in excellent shape.

BUSINESS AT THIS DATE.

Our receipts for the month of March show an increase over the same month for several years past. This was undoubtedly due mostly to the warm weather so long continued early in the month. Though orders are holding up well, the cold weather through which we have been passing has diminished them somewhat.

SECONDS IN RUBBER GLOVES.

We have several dozen pairs of No. 10 and No. 12 rubber gloves that were classed with seconds at the factory. The defects are so slight that, for all practical purposes, especially for handling bees, they are just as good as first grade. We offer them, while they last, at half price—75c a pair, postpaid, or \$6.50 per dozen pairs.

SECTION-HOLDER BOTTOMS, $\frac{3}{4} \times 1 \frac{1}{2} \times 18$.

We have a quantity of section-holder bottoms $\frac{3}{4}$ inch thicker than the regular size, which we offer at the same price as the regular $\frac{3}{4}$ inch, to those who prefer a heavier bar. They measure $\frac{3}{4} \times 1 \frac{1}{2} \times 18$ inches, slotted, for 4 regular $\frac{4}{8}$ -inch sections. Price 60c per 100; \$2.50 for 500. With the $\frac{1}{2}$ -inch end-block, double this price.

GLOBE LAWN-MOWERS.

We quote a reduction of 50 cts. each on the prices of lawn-mowers given in our catalog, on page 50, to our readers and their friends. There is no better cheap mower made than the Globe. We have had one in use on our lawn for five years, and it runs easy and does splendid work. With above reduction the prices will be, for 10-inch, \$3.50; 12-in., \$3.75; 14-in., \$4.00; 16 in., \$4.25; 18-in., \$4.50.

SPRAY PUMPS AND SPRINKLERS.

Those interested in these goods will find them listed again on the inside cover pages of this issue. I hardly think you will find pumps of equal value offered elsewhere for the low prices we name. Those who wish to buy in quantities, or act as agents, will do well to write for our wholesale prices, stating which pumps they desire prices on, and, if possible, the number wanted. As we have bought for this season nearly a thousand pumps and sprinklers, we are prepared to give bottom prices.

GREEN WIRE CLOTH FOR SCREENS.

Some have inquired if we still handle wire cloth for screens. This is listed on page 10 of our catalog. We have it in full rolls, 100 feet long, and any common width, 24, 26, 28, 30, 32, 34, 36, 38, 40, and 42, at \$1.75 per 100 square feet, or cut pieces at 2c per sq. foot. We have also a few rolls 8 inches wide, 100 feet long, that we will sell at \$1.00 each, and a few 12 inches wide and 100 feet long, at \$1.50. This will do just as well for queen-cages and covers for nucleus hives as the wider, and it comes cheaper per square foot.

OFF-GRADE MAPLE SUGAR AND SYRUP.

The short crop of maple products in this section was the result of very warm spring-like weather during the first three weeks of March, soon after the sugar-bushes were opened. This was followed by another cold spell in which a good deal more sugar and syrup has been made. This is beautiful in color, but has a buddy taste. We could supply any who want this kind of syrup, at 30c per gallon less than the first run, and sugar at 3c per lb. less. We shall be pleased to mail samples of either for 5c to pay postage and packing. We can still supply first-run syrup and sugar as quoted in last issue; namely, \$1.10 per gallon for syrup; in 10-gallon lots, \$1.00; sugar at 10, 9, and 8 cts. per lb. for No. 1, 2,

and 3 grades; $\frac{1}{2}$ c off in 50-lb. lots; 1c off in barrel lots of 300 lbs. At this writing we are a little behind on orders for sugar of best grade.

COWAN EXTRACTORS.

The orders that come, and the kind words which follow, are proving beyond a peradventure that this is the best and most rapid honey-extractor obtainable at the present time. One man writes that he would not take \$50 for his if he could not replace it.

We happen to have at Grand Island, Neb., a two-frame Cowan No. 15 for L. frame, which we will have shipped to any customer in the West, in want of that size, for \$10.00—the regular price free on board cars. It being so far west it will be an advantage in saving of freight to some one in that section.

SLICED WOOD SEPARATORS.

Since we have been furnishing sawed wood separators there has been a much smaller demand for the sliced ones, which, though not as straight and durable and nice to use as the sawed ones, yet answer a good purpose. Many prefer to use them but once, and then throw them away. We have quite a large stock of the following sizes, which we offer at reduced prices to move them off:

$3\frac{1}{2}$ x17 and $17\frac{1}{2}$ in. at 20c per 100, \$1.50 per 1000.
 $3\frac{1}{2}$ x18, or any length w. can make by cutting off these lengths, 25c per 100, \$1.75 per 1000.
 $4\frac{1}{2}$ x17, slotted both sides, 30c per 100, \$2.00 per 1000.
 $4\frac{1}{2}$ x18, slotted both sides, 35c per 100, \$2.50 per 1000.
 $4\frac{1}{2}$ x18, slotted both sides, and slightly colored or mildewed, 25c per 100, \$2.00 per 1000.

SUPERIOR QUALITY AND WORKMANSHIP.

It is a pleasure to read the many letters which come to us thanking us for the very fine quality of material and workmanship on the goods we are sending out this year. We give you, in Kind Words column, samples of these testimonials from time to time. If we should attempt to give them all it would take more space than would be profitable for that kind of matter. These most often mention the Doretailed hives, extra polished sections, comb foundation, extractors, smokers, etc. Some of the best we can not give, because they mention goods from other places to their disadvantage, and we do not deem it prudent or courteous to reflect in public print on the wares of our competitors. Some, however, have ordered goods from dealers supposing that they would get goods of our make, and were disappointed. To such we would say that, if you want goods of our make, be sure you get them from us or one of the dealers who handle our goods. You will find a partial list of them on page 6 of our catalog.

EGYPTIAN OR WINTER ONION.

There is no other onion known at present that will winter like the above. During the recent freeze that killed almost every thing, they came out unharmed, and we are selling them in the market right along, taken right from the open ground. We have been wintering over the sets during the last winter, without any trouble whatever. The fact that they are now beginning to sprout is a proof that they are unharmed. They were kept in a very cold dry place; and as we have a large stock on hand we offer it at the following exceedingly low prices: Quart, 5 cts.; peck, 25 cts.; bushel, 75 cts. If you want to get a stand of Egyptian onions, now is your chance. While they make much larger and finer-flavored onions with heavy manuring, they will grow almost anywhere under most circumstances. In fact, they are about the hardest vegetable or plant that I know of.

REDUCTION IN THE PRICE OF EARLY OHIO, EARLY PURITAN, LEE'S FAVORITE, AND RURAL NEW-YORKER POTATOES.

As the above varieties are beginning to sprout some in our cold cellar, we offer them, until sold, at the following reduction: Peck, 35 cts.; bushel, \$1.00; per barrel of 11 pecks, \$2.50. This makes them the same price as we have been selling the Monroe Seedling. We still have the latter at the same price, but they were raised and placed in the cellar so late in the fall that they are at present unsprouted, and about as firm and solid as when they were dug. This, you see, is the advantage of late-planted potatoes. We can not make any decline in the price of the Freemans; and one of the good qualities of

the Freeman is, that they are very slow about sprouting or wilting, no matter whether they were raised early or late. Second size of any of the above potatoes, *half price*.

EDGAR QUEEN STRAWBERRIES.

We once offered this for sale, and then dropped it out of our list, and I am really ashamed to tell the reason. I guess I had better, though, after all. When we first got hold of it we had an impression that it was a *perfect* berry, and I was much delighted with its strong luxuriant growth and beautiful large berries. So I planted three rows, 40 rods long or more; but so many of the berries were gnarly and knotted that I concluded to drop it; and then somebody told me that it was imperfect, or pistillate, and I had neglected to put any perfect berries near it. In spite of this, last season it gave us an immense crop of large fine berries, but a good many of them were poorly shaped, from lack of a fertilizer. We have this spring a magnificent lot of extra strong plants that we can furnish at our regular prices; namely, 10 cts. for 10; 75 cts. per 100; \$6.00 per 1000. If wanted by mail, add 25 cts. per 100 for postage. But be sure you plant some perfect variety for fertilizer every third or fourth row, and *don't you forget it*. We can also furnish nice Warfield plants (imperfect) at the same price.

TOBACCO DUST AS AN INSECTICIDE AND FERTILIZER.

During the past winter all our lettuce has been set in the greenhouses in a mulch with perhaps from half an inch to an inch of tobacco dust spread over the surface of the beds, and not a green fly has been noticed from the time of setting out the plants till harvesting the crop where this precaution has been taken. On three different beds, however, where we neglected to do this, the green fly was worse than I ever saw it before. In fact, two of the beds were ruined, almost before I knew it. Our Experiment Station has said, I believe, that the tobacco dust is worth about as much as stable manure as a fertilizer. I can readily believe this, from what experience I have had; and I consider it the best and cheapest insecticide for any plant that is close enough to the ground so you can cover plant and all with tobacco. Our squash-boxes and wire-cloth frames were not used last season at all, because the tobacco rendered them unnecessary. We have it in 10-lb. packages at 2 1/2 cts. per lb.; 25 lbs. at 2 cts. per lb.; 100 lbs., \$1.75; and for an original case containing about 400 lbs. we will make the price on the case and all an even \$5.00. If all the tobacco produced in the world could be confined strictly to killing bugs and fertilizing plants, what a wonderful stride our people would make, both in godliness and prosperity!

NEW EXPRESS SHIPPING ARRANGEMENTS.

With the advent of the new east and west railroad four years ago came the United States Express Co. to do business in Medina. We then had both American and U. S., and a certain degree of competition. Last September the U. S. supplanted the American on the old railroad, leaving us with only one express company again. A short time ago, owing to a disagreement between this company and the Adams Co., the latter would not receive express matter from the U. S. Co. for points where the Adams could alone make delivery, unless all charges were prepaid. This was making us no little trouble, and we proceeded to make arrangements to avoid it if possible. We have completed plans that we have been putting into execution for the past two weeks. We send all express matter, destined for delivery offices that are exclusively American, Adams, and Wells, Fargo & Co., by freight to Akron, O., 20 miles east, and it is there started promptly to destination by these companies respectively. We have one freight train each day to Akron; and in cases of great urgency we can send by express, there being two express trains daily. By this arrangement we are prepared to ship by any of the four companies—U. S., Adams, American, and W. F. & Co., besides getting Akron competitive rates on the latter three. This means quite a saving in charges to our customers who can receive their express shipments only by the three last-named companies. We go to the extra trouble involved, and pay the freight to Akron ourselves, for the benefit of these customers. The freight in the course of a season will amount to quite an item, being 25c or more each day. If, therefore, those preferring delivery by Adams,

American, or W., F. & Co., will send with their express orders an extra 5 cents on amounts of \$.00 or less, and 10c on orders from \$1.00 to \$10.00, it will help materially to meet this extra expense we go to for your benefit. As an illustration of what you gain, we will suppose a customer in Phoenix, Ariz., orders, by express, goods weighing 10 lbs. if we ship by U. S., the only company doing business here, and they turn it over to the W., F. & Co., the only company doing business in Phoenix, the charges through will be \$2.40. By shipping the 10 lbs. from Akron, all the way by W., F. & Co., the charges are only \$1.45—a saving of 75c. This is an extreme case; but it illustrates the advantage of shipping all the way by only one express company when it is possible.

B. P. S. PURE READY-MIXED PAINTS.

We have recently put in a full line of family, carriage, floor, and house paints, ready mixed, in cans of various sizes, and all colors. There has been so much cheap adulterated trash put upon the market, which has given no end of trouble and dissatisfaction, that we would not put in the stock without the best assurance from the manufacturers that we were to have pure goods. They guarantee to take every pound off our hands, and pay for analysis, if found adulterated. Wishing to confirm or disprove their representation, and satisfy ourselves, we went to the expense of an analysis by the State Chemist. His report confirms the claims of the makers of the paint, that the goods are strictly pure white lead, zinc, and linseed oil, with pure colors for the proper tint, and a slight trace of dryer. For bee-hives we use and recommend white. If for this or any other use you require colors, we can send you on request the color-card, with prices. The paint is made by the Burfiss, Paterson & Sargeant Co., of Cleveland, O. Prices for bee-hive paint, as quoted in catalog, are, 1 pint, 25c; quart, 45c; half-gal., 85c; gal., \$1.60. Colors for house-painting furnished at the same price. In writing for prices and color-cards, state for what you want to use the paint.

SECOND-HAND FOUNDATION-MILLS.

We offer at special low prices the following list of second-hand foundation-mills which have accumulated on our hands during the past few months. If any desire a sample of foundation made on these mills before ordering, we shall be pleased to mail it on request stating the kind or number of mill that you want.

One 6-inch hex., No. R; price \$10.00. This mill is in good condition, and just right for surplus foundation 9 to 10 feet to the pound.

One 6-inch hex., No. Y; price \$10.00. This is a good mill, suitable for surplus foundation 10 feet to the pound.

One 6-inch hex., No. A A; price \$10.00. This is in good condition, and suitable for surplus foundation 10 feet to the pound.

One 6-inch hex., No. 1461; price \$9.00. This is in fair condition, and will make foundation 10 feet to the pound.

One 10-inch round-cell No. F F. Price \$15.00. This is a late style and make of mill, practically equal to a new one.

One 12-inch hex., No. 1532. Price \$22.50. This is almost a new machine, and a bargain for the price.

All the above have the latest style of frames; the following are old style:

One 10-inch round-cell heavy shallow wall, No. EE. Price \$8.00. This is an old-style mill little used, in fair condition.

One 10-inch round-cell heavy shallow wall, No. GG. Price \$8.00. This is an old-style mill, almost new, but a fair machine for the price at which we offer it.

One 10-inch round cell, heavy, No. W; price \$10.00. This is suited for only heavy foundation, and will answer nicely for that purpose.

One 9-inch Dunham, round cell, heavy; price \$8.00. This mill is in fair condition, and is suited for heavy foundation only.

One 10-inch Pelham, almost new, and of the latest pattern, for heavy brood foundation only. Will sell for \$9.00.

SECOND-HAND MACHINERY.

We still have on hand quite a line of second-hand machinery. If any of our readers or their friends contemplate putting in machinery we are prepared to fit you out from cellar to garret with every thing you need in engines, boilers, machinery, shafting, pulleys, hangers, belting, saws, etc. The following

is a partial list of the second-hand machinery we have to sell. If you desire further particulars we shall be pleased to hear from you.

One 20-H. P. Fishkill horizontal engine, rebuilt, and as good as new; would cost new \$400; will sell for \$175, or with new boiler for \$375.

Two four-piece section-machines, as good as new; they cost new, \$85 each; we will sell them for \$25 each.

A lot of ripping-tables with heavy mandrel, and screw and chain attachment, such as we used for sawing sections in the old way; worth \$25; will sell at \$17.50 each, including 1 rip-saw.

SPECIAL SECTIONS AT SPECIAL PRICES.

Although we have sold quite a number of these, yet we find that we still have in stock the following list of No. 1 white sections, old stock made before we began making extra polished. We offer these, while they last, at \$2.50 per 1000; 2000 for \$4.50; 3000 for \$6.50, or 5000 for \$10.00. At the rate they have been going they are not likely to last long. When these are gone we shall have none but our extra polished sections to offer, and the No. 2 grade selected from them in manufacturing. The sizes on hand here are as follows:

22,000	4 1/4 x 4 1/4 x 1 1/8	open four sides.
35,000	" " 1 1/8	open top.
4,000	" " 1 1/8	closed top.
5,000	" " 1 1/8	open top.
9,000	" " "	closed top.
52,000	" " 7	to foot, open top.
6,000	" " 7	to foot, closed top.
26,000	" " 1 1/2	open top.
12,000	" " "	open four sides.

Besides the above we have at Bankers, Hillsdale Co., Mich., the following, which are offered at the same prices:

20,000	4 1/4 x 4 1/4 x 1 1/8	open top.
30,000	" " 1 1/8 and 7	to foot, open top.

All No. 1 white, made two years ago, and choice sections. Send orders for these to us here at Medina.

In our stock at St. Paul, Minn., with H. G. Acklin, 1024 Miss. St., we have about the following quantities of No. 1 white sections, which we offer at the same prices. Send orders to above address for these or any other items needed in the line of bee-keepers' supplies. There is a full stock ready for prompt shipment, but none of our new sections are in stock there yet.

18,000	4 1/4 x 4 1/4 x 7	to foot, open top.
30,000	" " 1 1/8	open top.
8,000	" " 1 1/8	open top.

Also of No. 1 cream, at same price as on stock here named below, the following:

9,000	4 1/4 x 4 1/4 x 1 1/8	open top.
10,000	" " 1 1/8	open top.

Of No. 1 cream and seconds, from our new extra polished sections, which are about equal in value, we have in stock here the following, which we offer at \$2.00 per 1000; 30.0 for \$5.70; 5000 for \$9.00.

7,500	4 1/4 x 4 1/4 x 2	open top.
7,500	" " 2	open four sides.
25,000	" " 1 1/8	open top.
10,000	" " 7	to foot, open top.

Of other sizes of No. 1 white sections we have the following at the price annexed:

3500	scant 6 x 5 x 1 1/8	at \$2.50 per 1000.
500	5 1/4 x 5 1/4 x 1 1/8	closed top, at \$3.00 per 1000.
2000	" " 1 1/8	open " " 3.00 "
2000	5 x 6 x 1 1/8	" " " 3.00 "
700	5 1/4 x 5 1/4 x 1 1/8	" " " 2.00 for lot.
9000	6 1/4 x 5 1/4 x 2	" " " 3.00 per 1000.
4500	" " 1 1/8	" " " 3.00 "
6000	5 1/4 x 6 1/4 x 1 1/8	" " " 3.00 "
2000	" " "	closed top, " 3.00 "

The above are all choice fresh sections, and a bargain at the price. We have, besides, a lot of odds and ends too numerous to list here, of which we shall be pleased to mail a list of sizes, quantities, and prices at which we will close out, to any one who is interested, and sends us a request for it. You may find in it something you can use at trifling cost.

VANDEUSEN THIN FLAT-BOTTOM FOUNDATION.

If any of our customers prefer VanDusen's flat-bottom foundation we can supply it in regular 25-lb. boxes at 50c per lb., or \$12.50 per box. We have it in stock to ship with other goods when so desired.